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ACU

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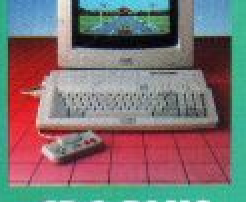
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AMS MSE 3

BrunWord

ROM Module £125

The BrunWord ROM Module is a compact unit which plugs directly onto the expansion socket of the CPC6128 or 6128 Plus. It overcomes the memory limitations of the CPC computer by incorporating the entire BrunWord Elite system into one very high capacity ROM (256K bytes). The module measures three inches wide, half an inch thick and extends just two and a half inches behind the computer.

On the ROM we have BrunWord Elite, Headline, 10 Headline fonts (including 'Chelmer' and 'Clacton'), 8 fonts for downloading to a 24 pin printer, BrunSpell, 30,000 word dictionary and Info-Script. Second disc drives owners can have KDS ROMDOS added (not 6128 plus) for £15 extra, and remember that no ROM box is needed.

Great Power

Plug on the module, switch ON the computer, type |BW and the whole BrunWord Elite system is in the computer ready for immediate use. You can type into the word processor, check the spelling, print it out, use the database to print labels or search for and transfer data to the word processor, print using headline fonts and 24 pin fonts, all without a single disc operation, except maybe to load data into Info-script. Any BrunWord Elite facility can be used without upsetting other data. You can even view screen dumps stored on disc, or format a 3 inch or 3.5 inch disc, without disturbing the text in BrunWord or the data in Info-Script.

Printing Pictures

The BrunWord ROM module has a host of new features including five high quality, high speed screen dump routines for 9 pin and 24 pin printers. These are special routines using the BrunWord Elite 8 bit printer status port and they print incredibly fast compared to desk top publishers. This entire page *including* the drawing, the large 'BrunWord', the address, credit card symbols and Teddy, was printed using the BrunWord ROM module and a wide carriage 24 pin printer *in one printing operation.*

Relative Reverse

For printers with reverse (Amstrad DMP2160, Star LC10 etc), there are now three reference points. The top of the page, the current print head position and any point previously defined within the text. The print head can be moved to a relative position above or below any of these references. This refinement coupled, with the new ability to control the box reverse, make complex layouts much easier to design and give faster, more efficient printouts.

Small and Light

The BrunWord ROM Module has been made as small and light as possible. When mounted directly onto the computer it is very very reliable. You are likely to damage the keyboard if you jolt it hard enough to give problems. (Other ROM systems use an unwieldy ROM box which can 'crash' with even the slightest knock).

Very Serious

The BrunWord ROM Module is perfect for the basic machine, you need no other add ons. However, anyone who has two disc drives knows the frustration of inserting a disc, asking to load a file and being told that the other drive has no disc in it. You simply forgot to inform the computer to change over drives. You know there's no disc in the other drive, the computer now knows, so what's the problem? The software doesn't test *both* drives!!! That's now a thing of the past. The BrunWord ROM Module will load from whichever drive has the disc in it. It's simple and it's brilliant, and if your second drive is a 3.5 inch, you can use the fast file system which loads a 64K file into Info-Script in 7 seconds or (with extra memory) a 256K file in 16 seconds.

Quote

"It's totally brilliant..... carries on the extreme user friendliness of Brunning products to a very high standard.... I have one of these little gems plugged into the back of my CPC right now. As you can imagine, anything that passes through the ACU office can expect to come in for a hard time and, I can safely say that to date, the BrunWord ROM has performed in an exemplary fashion on all fronts."
Chris Knight (ACU Editor) - ACU August 1991.

BrunWord 6128 £30

Complete word processing package (disc) with word processor, spelling checker and card filing programme. BrunWord 6128 out performs all other word processors for the CPC6128. It's high speed screen routine, gives it a very fast response and the editor features are logically arranged to be easy to learn. The spelling checker, with its dictionary, load into memory at the same time as the word processor, making access very convenient and exceptionally fast. It is supplied with a 40 page manual and a tutor file.

Info-Script £50

Complete data processing package (disc), including all the features of BrunWord 6128 and BrunSpell. The word processor and database can be resident together giving the speed and convenience of access with no disc delays.

9 Pin Elite £55

The Elite system for 9 pin printers (on disc) consists of BrunWord Elite, BrunSpell, Headline, 8 bit printer status port and 7 'type setting' fonts (fonts are 24 pin in size but for 9 pin printers). Total price £55 inclusive.

9 Pin Elite+Info £92

The Elite system (on disc) as above but including Info-Script and a backup disc. Total price £92 inclusive.

24 Pin Elite+Info £90

BrunWord Elite (on disc), BrunSpell, Info-Script, back up disc, 8 bit status port and 7 'type setting' fonts for downloading to a 24 pin printer. Total price £90 inclusive.

References

ACU	SEP	1990	Page 58/59	-	Encryption.
ACU	OCT	1990	Page 56/57	-	Headline.
ACU	DEC	1990	Page 24/25	-	Info-Script.
AA	FEB	1991	Page 18	-	BrunWord 6128
ACU	MAY	1991	Page 42/43	-	BrunWord Elite.
ACU	JUN	1991	Page 60/61	-	Elite Font Editor.
ACU	AUG	1991	Page 20/21	-	BrunWord ROM Module.



'William Taylor'

This delightful line drawing by Chris Rothero is one of the illustrations in 'Strawberry Fair', a book of traditional songs and easy piano music, published by A & C Black Ltd. It was Dart Scanned into four 'screens' by agreement.

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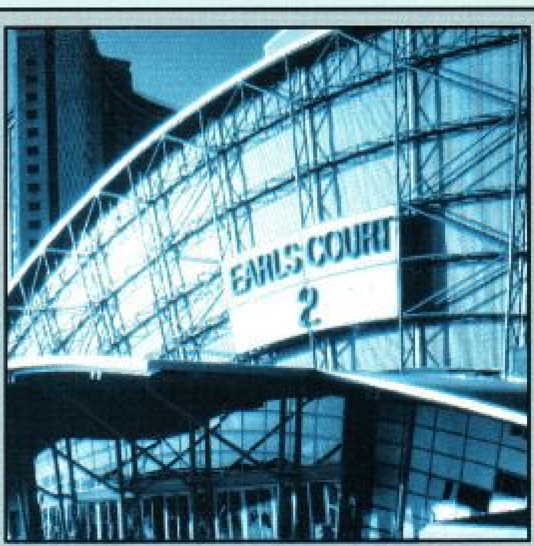
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REGULARS

FEATURES



DISCOUNT ENTERTAIN-MENT

If you haven't considered popping down to the European Computer Entertainment Show at Earls Court II yet, now is the time to give it very serious thought indeed.

With all of the big games houses being represented, the CES is one of the world's foremost events for home computers and gaming.

You can expect to see all of the latest products on the market, especially those that are being lined up for the Christmas market.

Backed by the Prince's Trust charity, the four day event, open to the public from September 6-9, is guaranteed to feature plenty of fun-packed events, along with some unique 'look into the future' exhibits.

For a great value for money day out, be sure to get down to Earls Court II. However, for an even greater value day out, why not cut out the coupon below and get yourself a 50p discount off the £7 entry price.

You can be sure that all your favourite games producers will be there, so why not join them?

THE EUROPEAN COMPUTER ENTERTAINMENT SHOW

EARLS COURT 2 LONDON
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FAIR NEWS

It certainly looks like the decision to make the All Formats Computer Fair a nationwide event has paid off. After two excellent events in the Midlands, the AFCF crew have proven that getting everything computing under one roof not only attracts the exhibitors, but also keeps prices down for us punters.

As a result of the ongoing success, the fair will now be held at five different venues around the country, at least four times a year at each.

Those of you who got along to the North event last Sunday, at the University of Leeds Sports Centre, Calverly Street, Central Leeds, will know what we're talking about.

However, if you still haven't had the chance to get to the fair, cast your eyes over the following venues and take your pick.

London – Royal Horticultural Hall, Greycoat Street, Westminster (Victoria Tube) – Saturday 7th September.

Midlands – National Motorcycle Museum, Solihull, J6 M42, Birmingham International Station – Saturday 14th September.

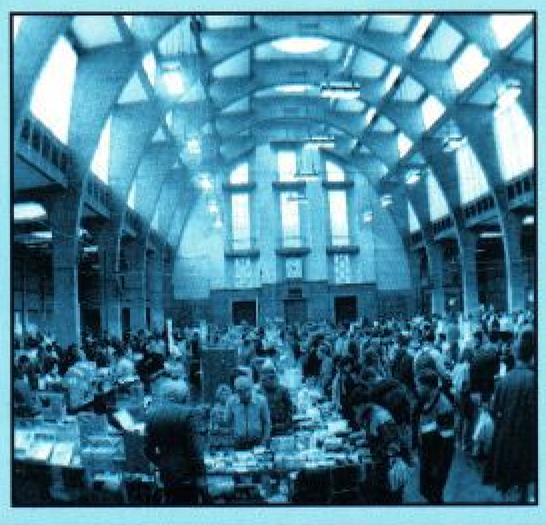
Scotland – City Hall, Candleriggs, Glasgow – Sunday 22nd September.

West – The Brunel Centre, Bristol Old Station, next to the Temple Meads Station – Sunday 6th October.

Admission to all of the events is still only £4, and the cost of exhibiting your wares is a mere £60. Starting at 10am in the morning and finishing at 4pm, there is plenty of parking space at all of the venues, so there's no excuse to miss out on the fun from here on in.

For advance ticket information, try ringing John Riding on 0225 868100. Alternatively, if you just want some info from the Fair Newsline, try ringing 0898 299389.

Happy hunting.



JOYFUL TIDINGS

Bridlington based Euromax has just announced another addition to its exciting range of power joysticks, the American Beeshu products.

Following its introduction at the April Computer Entertainment Show in London, the Beeshu has been a red hot item on the market, due to its many excellent features.

Including left- or right-handed fire buttons, anything up to 6 turbo buttons for constant firepower and the excellent Gizmo device to take stereo headphones, the Beeshu range really is a step ahead of the rest.

Look out for these beauties on the shelves very soon or, if you want to know more about the range and prices, try ringing Euromax on 0262 601006.

In the meantime, you can bet your bottom dollar that we'll be putting the range through its paces in the pages of ACU, so keep your eyes peeled for the verdict very soon.

DIZZY SALES

The 8-bit market lives on and on! Proof of that statement comes in the form of the ever-increasing sales of Code Masters' Dizzy series.

Since its release in January 1989, Treasure Island Dizzy has consistently maintained a presence in the Gallup All Formats Top 40, and is still hanging in there in its 122nd week!

With Fantasy World Dizzy notching up its 77th week, and both MagicLand Dizzy and the new Dizzy panic in very strong chart positions, the outlook for the 8-bit market is very strong indeed.

Adding the countless thousands of CPC sales of Treasure Island Dizzy to the 100,000 Spectrum sales, should prove that there is still plenty of life in the 8-bit market yet. Keep up the good work, boys and girls.

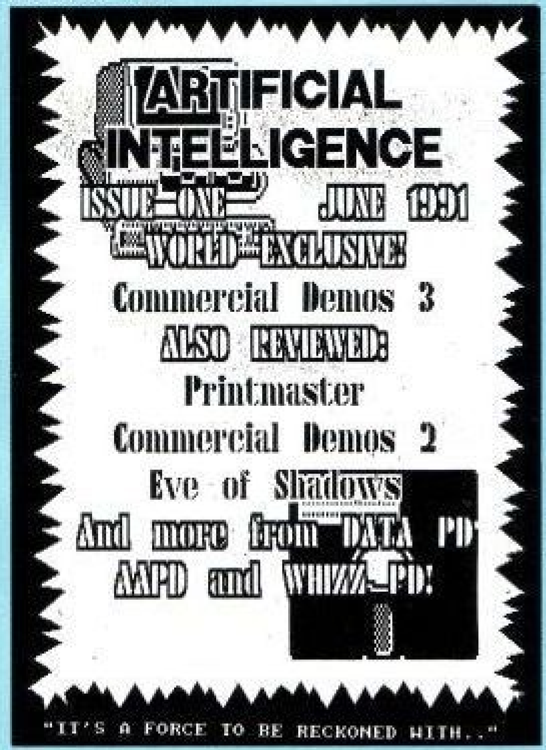
NEW ARRIVAL

A brand spanking new CPC fanzine has just hit the streets, trading under the unassuming title of *Artificial Intelligence.*

Catering for all aspects of the CPC public domain world, editor Tim Blackbond has crammed this little gem full of news, reviews, hints, tips and much, much more.

At a cost of just £1, including postage and packing, Artificial Intelligence can be obtained from 19 Lee Street, Littletown, Liversedge, West Yorkshire WF15 6DZ.

Making your cheques/POs payable to Tim Blackbond should ensure you get hold of an excitement-packed first issue of AI.


ARTIFICIAL INTELLIGENCE
ISSUE ONE JUNE 1991
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ALSO REVIEWED:
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FAST LANE PRINTING

Look out for the brand new Seikosha SO2415 overtaking you in the fast lane, with a maximum printing speed of 300 cps, average speeds of 240/200 cps in draft and 50 cps in NLQ.

Designed for high-output speeds and wide-carriage printing, the 9 pin dot matrix speedster is targetted at the professional user and business executive who requires a heavy duty, durable, wide carriage machine handling large workloads.

Working at a quiet 53 dB, the print quality offers resolutions up to 240 dpi, while the machine offers compatibility with almost all software and hardware products.

Offering S Courier, S Prestige, S Gothic, S Sans Serif and S Script fonts as standard, each usable in a variety of printstyles and sizes, the SP2415 should meet the requirements of most users, and is easy to use via a simple push button panel.

Featuring a large 18K buffer, to cope with large amounts of incoming data, and a host of other options, the SP2415 is excellent value for money at just £320 plus VAT.

Available from all Seikosha dealers, with a 12-month warranty to boot, why not nip down to your nearest stockist and take it for a test spin now.

If you don't know of any stockists in your area, try calling Seikosha on 0753 685873 for more information.

BE WARNED

If you weren't aware of the fact by now, software piracy not only damages the games industry, it is also illegal.

The Federation Against Software Theft (FAST), has, for six years, been campaigning against the unauthorised duplication of software, and a recent court case should prove just how tough the penalties can be for piracy.

At Mansfield Magistrates Court on June 21, Andrew Jayes, trading as A&J Software of Nottingham, was found guilty of five offences under the Copyright, Designs and Patents Act 1988 and sentenced to three months' imprisonment.

During the month of June, sixteen further raids, inspired by FAST's investigations, led to the seizure of over 10,000 discs all over the country.

The moral of this story? If in doubt, leave well alone! Software copying between friends happens every day and, although we could never condone it, we alone cannot stop it.

However, if you think someone is copying software to make a profit out of it, just remember that in the long run he/she will be spoiling everybody's gaming fun.

For more information about what you can do to stop this nasty theft, ring FAST on 0628 660377 and help us all to keep gaming the good clean fun that it should be.



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'We have won many thousands' Mr PE Roberts of Dorset who so far has won more than £46,000

*Copies of these and other endorsements from actual customers are available on request.

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NO CONSOLE-ATION

I am writing on behalf of most of the Amstrad console owners, who I am sure will agree, that the amount of games on sale is very disappointing and annoying for people who forked out £100 for one.

They have now been on sale for almost a year and there are only about 15 games for them, although most of the games are good.

Will the superb Pit Fighter be released on the GX4000 games console? If not, when will it be released on the CPC. Also, when will the long-awaited Champ be on the shelves.

I would like to congratulate this magazine for the excellent drawing competitions.

PS. If you've got any Pit Fighter or Champ screenshots, please could you print them?

Johnathan Ryans, Doncaster, S. Yorks.

Ziggy: I thought I recognised that name from somewhere. Congratulations yourself, Johnathan, on some excellent entries to our drawing competitions. Keep up the good work.

On to the serious matter though, yes, I agree, the number of games available to GX4000 owners is disappointing. Especially when you consider the amount of games available to other console owners.

However, I have been assured that Pit Fighter is indeed coming to us Amstrad owners. Keep your eyes peeled around October/November time for this excellent blast and, as for the Champ? Well, we've been waiting for it as long as you have. Apparently, it is still being tweaked and refined but may well see the light of day very, very soon. As soon as we have more news, we'll let you know.

Also, when we've got some screenshots, they'll be printed straight away.

TOO TRIVIAL?

After reading the latest ACU and completing and returning the recent questionnaire, I was overcome with the desire to write this letter.

Time and time again, readers write in to the letters page asking for help on subjects which are very elementary. Other people ask why such elementary questions are published on such a regular basis, about the same things. Why not? To the reader, the question might seem to be a mere trifle, but to the writer, it is probably a cause of many a headache and heartache. We cannot all be proficient in all subjects.

As a possible answer, you mention in your questionnaire about bringing out supplements. On that line, why not produce A4 printed sheets on particular subjects (taken from a survey of all the previous letters and David Dorn's problem pages), which could be listed in an advertisement type format each month. The cost and work would be reasonably minimal, but it would satisfy a lot of the readers with easily solved problems, and also satisfy the readers with a grudge against people writing in for help on 'trivial' matters.



ZIGGY'S MAILBOX

The other alternative is to set up a help line on the lines of WACCI, where 'willing volunteers' put their names, addresses and phone numbers in print each month, with specialist subjects and available times for contact.

Selwyn Owen, Hatfield, Herts.

Ziggy: To be perfectly honest, Selwyn, I love trivia. The more the better, while our infamous series of Docs are left to struggle with the more technical queries.

Seriously though, no problem large or small will be turned away from these pages unless, of course, a single topic keeps arising month after month when it has already been dealt with once and for all.

Your solutions do seem to be very valid ones, however, and if there are any of you out there who would like to see printed solutions on specific topics, why not write in and tell us what the topic is and we'll set about producing some answer sheets.

Alternatively, if anyone out there would be willing to put his or her peace and quiet on the line by forwarding themselves as would-be troubleshooters, write in and we'll start making a list in the magazine for problem suffering sufferers, OK? Get writing now.

PUZZLING PROTYPE

I am a bit puzzled by the statement in the review of ProType in the August

issue that '240dpix216dpi on a 9-pin printer is certainly not to be sniffed at'. This is normal guadruple-density graphics, which Qualitas for several years and more recently Brunning's Headline both use to produce very high quality printing.

Both also do so with only two passes and so print only slightly slower than normal NLQ, whereas ProType apparently needs twelve, which seems very odd unless there is some feature of it that I haven't grasped.

Brunword Elite, with which Headline runs, also provides very powerful page layout facilities including the abilities to print in columns, to surround a block of text in one typeface and size by text in another, to justify and tabulate proportional text, and the production of boxes and family trees in up to seven different line thicknesses.

At £55, including the word processor, spelling-checker and dictionary, it strikes me better value for money than ProType, except where the latter is an add-on to an existing ProText.

M. Catton, Gosport, Hants.

Ziggy: Having had a brief word with Jim, he does concede to your considered opinions, Mr Catton, and believes he must have been suffering from post Pang syndrome when he included this sentiment.

Brunword Elite does, indeed, appear to be the field leader nowadays when it comes to word processing and page publishing although, as you yourself admit, the ProType program is an excellent add-on to the original ProText.

ACU BLUES

I am writing to you to try and find out why my local newsagent cannot seem to be able to get me your magazine every month.

I have put it on a regular order and yet I don't seem to be able to receive the magazine when I should. The last time I got your magazine was at the beginning of this month but, before that, it was April's edition that I had. The two magazines for May and June do not seem to have appeared at all.

My newsagent has tried to order them but to no avail. He keeps telling me that he has had no answer at all. When I first asked him to get me the issues that were missing, he told me that it should be easy enough. Well, if this is easy, then I certainly don't want it to get hard!

I have this problem quite frequently and I only seem to be able to get one out of three of your magazines. It seems that I cannot follow any regular features because I miss too much to keep in touch with it.

I cannot afford the annual subscription all at once, so I cannot eradicate the problem that way. Have you any suggestions?

I look forward to hearing from you soon.

Harry Hall, Mansfield, Nottinghamshire

Ziggy: Hmm. It seems to me that quite a few of you have been having problems getting hold of your favourite mag of late. We at ACU will certainly be looking into this matter but would welcome any letters from other readers who have been encountering similar problems.

If you've been getting your copies late, or not at all, please write in to me and let me know, so that we can do something about this very serious matter as quickly as possible.

CORRECTION TIME

Ziggy: Following up on the August issue of ACU, BASIC maestro Glynne Davies has written in to correct some awful howlers that appeared in the Basic column entitled Memory Manipulation. So thanks for your vigilance, Glynne and, for all of you who are experiencing difficulties with this installation of the Basic series, here are the howlers, in the order they appear in the article.

Program 1 Page 44
Line no:

50 If number>31 AND number<127 THEN PRINT CHR$(number); :REM If the number is within the character range display on screen.

Program 2 Page 45
Line no:

45 WHILE a<255

Program 3 Page 45
Line nos:

95 REM run 100

130 POKE &B72F,n: REM &B28F for 464

330 LOCATE 1,1:PRINT n; "Press any key"

Program 4 Page 45
Line nos:

10 DEF FNhyp (a,b)=SQR(a^2+b^2)

30 titles$="Hypotenuse Calculator": LOCATE (40-(LEN(titles$)))/2,1: PRINT title$

60 LOCATE 19,8:PRINT

CHR$(104)+CHR$(11)+CHR$(121)+CHR$(11)+CHR$(112)

Program 5 Page 45
Line nos:

40 DEF FNvp(n,y,ry)=y+(ry*COS(n)): REM define the vertical position.

70 INPUT "Enter horizontal centre"; x:CLS

In the following paragraph which commences with 'Next month…', RUN 2000 should read RUN 20000.

Program 6 Page 46
Line No:

90 FOR n=-PI to PI step 0.02: REM Classic circle drawing routine using trigonometry

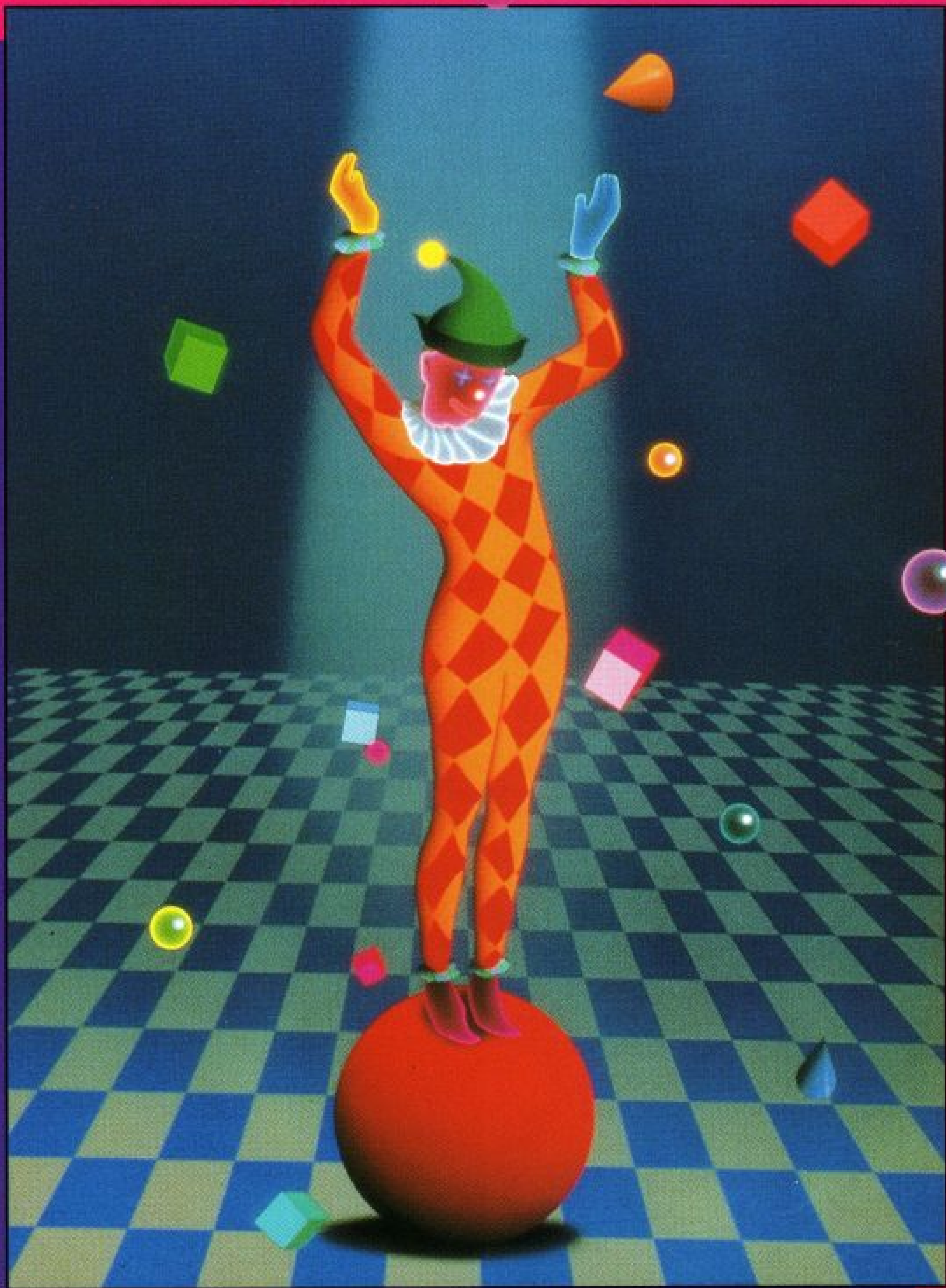
KEYWORD SEARCH PROGRAM
Page 46

20000 REM Line search for keywords, start program with line 1 followed by a blank then the keyword that you wish to search for. Run 20000

20005 "keysearch" should read "keyserch both times.
20110 PRINT#7 should read PRINT#8
20140 WHILE 1n should read WHILE ln
20150 11 should read 11 both times.
20170 1n should read ln
20190 11-1 should read ll-1
20200 as above
20220 a=a+11 should read a=a+ll
20224 should read 20234 END
20260 IF p=2 OR p=3 THEN PRINT ln; " "; :REM Only print to screen on 2 and 3
20280 IF n>a+40 THEN PRINT 8, CHR$(27); "–"; CHR$(1); : ELSE PRINT#8, CHR$(27); "—"; CHR$(0); :REM switch to underline (keyword over 40 characters along line) or normal (within the first 40 characters)
20290 PRINT#8, ln; " ";

Apologies to all and we'll do our best to see that it doesn't happen again. See you next month.
Ziggy

COMPETITION



If you haven't got hold of a copy of the fabulous SWAP yet, then here's your chance to win one, courtesy of those generous people at Palace Software. All you need to do is answer the three simple brain testers below and you could be one of five exceptionally lucky people to win a copy of the game and an excellent Rubik's Cube puzzle game. So, get your thinking caps on and here goes:

1. How heavy is the average human brain?
2. What is the name of the smaller organ based at the bottom of the two cortexes of the brain?
3. Which number completes the following sequence, 1, 3, 9, 27, 81, 243,...?

Very simple. The first five correct answers out of the mailbag will walk off with the goodies, so get puzzling and don't forget to state your preferred game format on your entry, then send it off to:

ACU Brainteaser Quiz,
Sunnyside Cottage,
Carluddon, St. Austell,
Cornwall. PL26 8TY.

The editor's decision is final.

PROTYPE – THE RETURN OF ARNOR!

Did you think Arnor had developed their last CPC product?

We must admit, it was starting to look that way. But now we are pleased to announce a stunning new arrival - *Protype*. This provides *Protext* with the improved printing features that many of you have requested.

We honestly believe that it is not possible to achieve better quality output from a 9 pin printer than with *Protype*. Just look at the examples below - all printed on an elderly Amstrad DMP 2000!

Protype costs just £30 and is available on disc only. It works with *Protext* ROM and disc versions and may also be used as a stand alone program.

5 years after its original release Protext remains indisputably the leading CPC word processor. In the February 1991 issue, AMSTRAD ACTION said:

> *"Without doubt the most complete word processor available for the CPC ... Protext is very much a professional quality program."*

AMSTRAD ACTION speed tests show Protext to be many times faster than other programs, for example:

Replace operation		Delete 17k block	
Program A	94 secs	*Program A*	17 secs
Program B	74 secs	*Program B*	15 secs
Protext	5 secs	*Protext*	1 sec

Prices

Protype	£30	(disc, Protext not required)
Protext + Protype	£45	(disc)
Rombo ROM box	£20	(when at least one ROM is purchased)

ROM prices

Protext	£25	Promerge Plus	£20
Maxam	£25	Utopia	£20
Prospell	£20	Maxam 1½	£20
		BCPL	£20

Liquid^{293K}	c_p/J kg^{-1} K^{-1}
① Acetic acid ($C_2H_4O_2$)	$1{\cdot}96 \times 10^3$
② Acetone (C_3H_6O)	$2{\cdot}21 \times 10^3$
③ Water$_{sea}$ (H_2O, salts)	$3{\cdot}90 \times 10^3$

Protype is a typesetting print enhancer designed to squeeze maximum quality from low-cost 9 and 24-pin dot matrix printers. This paragraph shows how **Protype** can work to a right-hand margin.

[A] **Ganga común,** *«Pterocles alchata»*, **38cm**
♀ con tres bandas en el pecho †
♂ faja pectoral castaña ‡

supports over 40 European languages including:

Anglo-Saxon	þ ð æ œ ā ē ī ō ū ǣ œ̄
Czech	á č ď é ě í ň ó ř š ť ú ů ý ž
Latvian	ā č ē ģ ī ķ ļ ņ š ū ž
Polish	ą ć ę ł ń ó ś ź ż
Turkish	á â ç ğ ı î ö ş ü

[B] just some of the non-ASCII symbols:

« » „ " " ¡ ¿ 1º 2ª ¶ §
© £ ¥ ¤ ¢ ½ ± ÷ × ↓ °
← → ♯ ♭ ß ð Đ þ Þ ø Ø
å Å æ Æ œ Œ ł Ł đ ħ Ħ

←line graphics too→

This actual-size printout was produced in one operation on a 9-pin printer using Arnor's Protext and **Protype**.

Protype (disc only) works on:
- ○ Amstrad CPC6128 [+]
- ○ **CPC664 & 64K expansion**
- ○ **CPC464 & 64K expansion & disc drive**

Uses less than 350 bytes of the main 64K.

PROTYPE IS VERSATILE:
- *multiple diacritics (accents) with any letter* (ȩ̀ ṇ̄ §̀ Ặ)
- *tabulates proportional text / micro-justifies spaces*
- **240 DPI × 216 DPI** *resolution on a 9-pin printer!*
- *works with all 9-pin or 24-pin Epson-compatible printers*
- *use from Protext, Basic or machine code*
- *includes the seven fonts used in this demonstration*
- *choice of character designs within a font* (page or page)
- mirror imaging of a line of text!
- ^{super}*script*, $_{sub}$ *script*, *underline*, [b] *box*, ⓔ *encircle*
- *kerning (spacing of 'difficult' character pairs* (AV)

Fæder ūre, þū þe eart on heofonum	(Old English)
Ár n-atheir, atá ar nèamh	(Irish Gaelic)
Fader vår som är i himmelen	(Swedish)
Svargayehi vädasiṭina apagē piyāṇeni	(Sinhalese)
Teve mūsų, kurs es danguje	(Lithuanian)
Pater noster, qui es in cælis	(Latin)

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TENTEXT

BY GEORGE FAGG

This may not look like a 10 liner, but by golly it is, if you discount George's message at the bottom and his kind offer to duplicate this program for any takers with a blank disc to spare.

Remember to save this excellent proggy before running it and watch as a real mini wordprocessor appears before your eyes.

As for controlling it, here goes: Control+L=Load; Control+S=Save; Control+J=Justify: Control+ C=Cl ear and COPY will print out your masterpiece.

To signify a new paragraph, simply leave a line or indent it and, although it only prints out a page at a time, longer print-outs can be achieved by printing one page directly after another on the same piece of paper.

Try it, you'll like it.



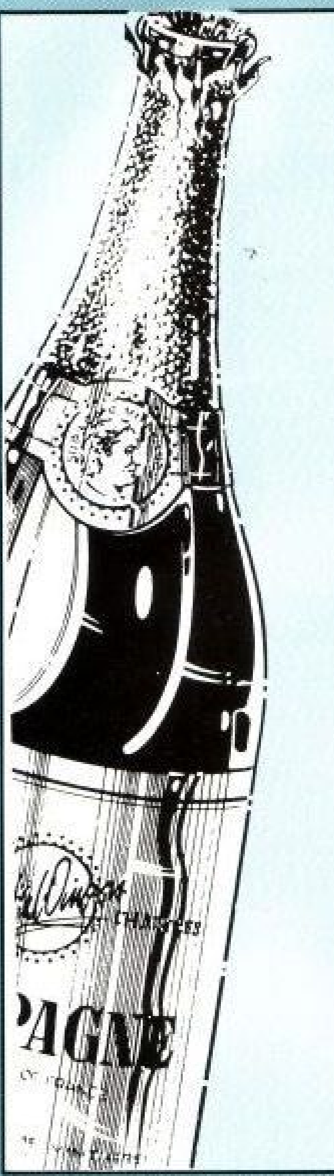
```
10 b=&5000:READ a$:FOR a=0 TO 48:POKE b+a,VAL("&"+
MID$(a$,a*2+1,2)):NEXT:CALL b:DATA 212802110040D50
60AC5CD21504F0603CD2150CB39CB17CB39CB17121310F118E
97E23D630FEF2C0F101080009C110D9C9,">c]@>kL_iAkNT_A
c2C@67m>\IA?o@0b<T\AbA>\AT?o6L61>W[A?1o0c@<@<W[Ab2
c4@"
20 DATA "L:0?Z?b1fb>[AA?oQ?cA`@6i>c6@D:k?Z0bcY`@cN
P^>7[A?Zc_@M<[A7I>\]AKc^M^c_N^cbFAjbk\[M<^AA>\AI<^
Abc6^1ol:VTol@:Vo11:W=ol:7[o3Ab?@Mo4bFK@oWObe4@o4@
:=odhbmVAo39bTA=o0:G2o2=boAZcNAW`g@F8PAFc<@VcF@K[?
<_oG8@0DO=oo:61=8C86m6c>@M>[A9o0:H@cVZ@e`ZcM@N8[AZ
==c"
30 DATA "YV@m:e`1ZcM@Z1cNNA`gZ@?c8jA>4@>\9AcjfAd84
@>\5Ao6=b8@>c6@Rc@@>c8@L6f>D\AoR0bciV@Nd:dbIo?<T\A
cQ7AckEAbi_c8d@>^5Ao0X8UcP4@c^C@c9V@:L[boBc1@^cEAW
b_c38@6NW[<T\AcC6@?f0<[YAbckEAbm_`8h@c8L@`VV@5?JFc
XZ@iiZadcYX@`^i:iZdiaZh`kY@i`:hk\6h=8Vb50L61>g[AEA
>\A"
40 DATA "[Gaej8`C_NA4Q?06X4odYB2`d608d1Ob7_o8Vbo0X
b?bY?6c8jAf:cFABk\?K1cF;^cKk^c0K^cFj@cF7@>\YAc_Z@m
cYU@c]O^ci1^j1?2Q[I;cA6_1Y?ae56e8a50Gob8bm4b8gb4bO
8b4I?>PKEi1d26M74?2<QI4[mhdn`84X4ecJ2^>6^A?;A1^0d?
6E\OoSobcmF^8T6m8U@AcUF@cSM_8P0DcSP_cQN_8WIAcU<@c1
6^`"
50 DATA "Yd@cU<@cUQ@c]O^8EXA>e[AA?`GAB8BAFcF@2cS_2
80DV4d1U?0cPV_c3S_6Hb8CIAc<M@[<U[AcL6^oCO:<9o3bGA>
[5Ao34:kN9oHeDk@o1;:41o<>dhoF@<go2@<15o><HecF[^ch]
@M85[A=L6a>E[Ao00:`F?<[YAch5@=0F8?AFc<@\6[mF8XAE>[
A^QK16b18HTb>T\AmZc_@Ncn@V1<\9Ac4o@`CTA>\AA?<V\Ac>
H@^"
60 DATA "XdcH7@o00b^<7j10gC<^iAkFE\A:T]AiRk\hI>\AX
?mmfcP@Z1ac^_@`4Po?4<3?Zm`1[CacZM@`84n6Xa1cYU@i64?
0Z6d0T@1k4\?6I<^AVb>\YAmcNY@o0?<9O888U\A1X?ac^N@`V
bo6X:4c9U@:4310A8]AZc]@<8nN^b[bZ111ZbcY7@104?o?\d:
c9]@8QnNbU5?cJX@1=o:N1o?<J1c]R@:mDNooT<mb=1oN1o?bZ
c]@"
70 DATA "<:mNJbcIHA1?3o68M<]A:mcU3@1N9o0:9\1?[8iaj
cY@fm>]QA?c9U@:jf1j:`h^8>2N1o?<C6B1H0b>f\AAM>]A2m?
^0e5A6c7AB16_I<\A:bcbn@`14@o6T:mc]d@iZaee:8?0Z6diV
k@ifkD8Zi`h:dk^Zd`hZiakX\`h6@=8c84nM<^AP608F^A>F\A
_\fMb280<n0o3240DJbcUZ@iij`8o[GikY@i`Zd8`;Gk^Jhi?D
81?"
80 DATA "?M84hoh`OF@>T\AcSHAciG@`Ig@>G[AoR0:k9o?:5
F?8ZcNAY5?ciW@[7M10VcV@1o0:56o8X81c1>@6P11cIV@oP0:
21o8:Hic>0@61a?8M4No0\:8aA>\A6c7AB`4mVcG@A?81X1maZ
cNA:`147m>\YAc_^@`h6@>\QA?c3HA65g?6A<\AI<^ARcjA@>@
1J1a>T\AcNY@o@0:<A>\AH?cUR@::A?0<W[AcA>@o2?:mVcV@P
:mc"
90 DATA "A>@o2?:jVcV@P8maZcNAR`4hR`4aX60`Vcg@2c4@h
8[`Yd@cYF@cYV@i6c>@NhbOP:mbG[<^IAcVb@:4Gbo?D8<^AA6
25oOd1o8fd:ib7o<^EA5?VcW@fi>[MAA?A?T1\0Ci^d:kH^cV6
@>^]AMhk:c]6@>\AAa78Ac1e@>^5Ao0X:6cA>@>D^Ao08chjAc
ENAb_A>^A1o8cS8@bVcV@A>^A1o8cj]@bM_`>D@>^5Ao0X`1bV
cU@"
100 DATA "U1?c;]@`S84n]eobN8MAFc<@VcF@VcV@Q16aE12?
88c:aA4nE1?OBc:AS84nY?3cD:A?92c:9A`4Lh`CE@<_IAi?I@
c77^`6HAh>U_Ac;:_<9kb2`82o`3CCb@Ao\3D@iEAoP8EA@FE2
V32AQKMIAL8ARJKIYKHK6I>8Ko32A2DLnILL88H8[JINM;o0@3
DD6BCEfBCACo10Z733P700R070E663B03340621A06T3621A06
3o00"

110 '
111 ' Tentext by G.S.Fagg
112 '
113 ' **** SAVE BEFORE RUNNING ****
114 '
115 ' CONTROL +  L = Load
116 ' CONTROL +  S = Save
117 ' CONTROL +  J = Justify
118 ' CONTROL +  C = Clear
119 ' COPY         = Print
120 '
121 ' I'll copy it for you if you send          a bl
ank disc and a stamped-              addressed jiff
y-bag to:
122 ' George Fagg, 21 Northwick Park Rd,       Harr
ow, Middx. HA1 2NY
```

AULD LANG SYNE

BY PAUL FAIRMAN

On a totally different note, here's something to help you get ready for New Year's Eve. Yep, it's a tasty CPC rendition of that classic festive tune. Run it and sit back to listen to those dulcet tones. Neat.



```
10 REM Programmed by Paul Fairman for ACU  -  6.7.
91
20 MODE 2:INK 0,0:BORDER 0:INK 1,26:PAPER 0:PEN 1:
CLS
30 FOR e=1 TO 96:READ l:k=k+l:NEXT:IF k<>15402 THE
N PRINT"Data error!":END ELSE RESTORE:FOR r=1 TO 3
2:READ a,b:SOUND 1,a,b:NEXT:GOSUB 50:RESTORE 70:FO
R t=1 TO 9:READ x,y:SOUND 1,x,y:NEXT:GOSUB 50:REST
ORE 90:FOR q=1 TO 9:READ a,b:SOUND 1,a,b:NEXT:GOSU
B 50
40 RESTORE 70:FOR a=1 TO 9:READ b,c:SOUND 1,b,c:NE
XT:RESTORE 100:FOR r=1 TO 8:READ a,b:SOUND 1,a,b:N
EXT:END
50 FOR as=1 TO 100:NEXT:RETURN
60 DATA 478,50,358,50,379,40,358,50,284,50,319,50,
358,40,319,50,284,50,358,50,0,5,358,50,284,50,239,
50,213,90,0,50
70 DATA 213,50,239,50,284,40,0,5,284,50,358,50,319
,50,358,50,319,50
80 DATA 284,50,358,50,426,40,0,5,426,50,478,50,358
,70
90 DATA 0,20,213,50,239,50,284,40,0,10,284,50,239,
50,213,90:' SHEEPSOFT 1991
100 DATA 0,20,284,50,358,50,426,40,0,2,426,50,478,
50,358,200
```

NOTE PAD

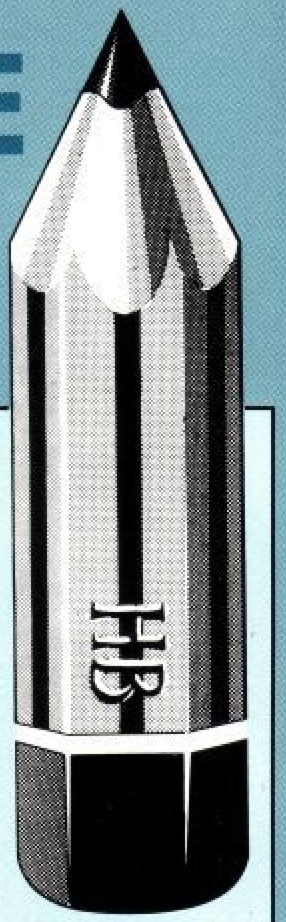
BY P BOWNES

Staying on a musical note, if you'll pardon the expression, this clever little number will allow you to use the numerical keys like a musical keyboard, to create some wonderful, if a bit weird, tunes.

Using 1-9, see if you can compose a masterpiece. Clever stuff.

```
10 REM note-pad By P.Bownes
20 MODE 1:INK 0,6:BORDER 6:INK 1,26:INK 2,25
30 LOCATE 10,5:PEN 2:PRINT"Note-Pad  ";CHR$(164);"
1991 P.Bownes"
40 LOCATE 4,13:PEN 1:PRINT"Use the number keys to
play tunes."
50 i$=INKEY$:IF i$="" THEN 50
60 i=VAL(i$):IF i=0 OR i>9 THEN 50 ELSE 70
70 BORDER RND*31:SOUND 3,i*10,2,4,3,9:GOTO 50
```

COLOUR SCRIBBLE



BY G BOWNES

Here's big brother getting in on the act, with a follow up to his original Colour Scribble printed back in November. Simply run it and fasten your seatbelt as the cascade of random colours and sounds assaults your senses. Mindboggling stuff.

```
10 REM colour scribble 2 by G.Bownes
20 MODE 0:INK 0,RND*31:BORDER RND*31
30 LOCATE 2,1:INK 1,26:PEN 1:PRINT"colour scribble
 2"
40 FOR c=1 TO 15:INK c,RND*31:NEXT
50 FOR p=1 TO 20:x=RND*630:y=RND*390
60 MOVE x,y:DRAW RND*630,RND*390,RND*15
70 NEXT:FOR c=1 TO 15:INK c,RND*31,RND*31
80 s=INT(RND*150):SOUND RND*4+1,s,10
90 NEXT:LOCATE 2,25:PEN 1:INK 1,26
100 PRINT"Press any key":CALL &BB18:RUN
```

RECORD

BY ROBIN GILBERT

We've had a word processor this month, so how about a mini database to boot? This excellent utility will allow you to create new files, add to them, search through them, save and load them and do just about whatever you want with them, to keep a track of your very own collection of records.

Come to think of it, any collection would fit in with this neat program very easily. Just keep your saving disc handy and get straight to work with this super proggy. Good work.



```
1 ' The Record Files by Robin Gilbert.
2 ' (C) Copyright 1990
3 '
4 KEY 0,"pen 1:mode 2:list"+CHR$(13):KEY 7,"run"+C
HR$(13):KEY 9,"save"+CHR$(34)+"R"+CHR$(13)
10 INK 0,0:BORDER 0:INK 1,14:INK 2,24:INK 3,26:DIM
 r$(100):m=7:m$(1)="Create New File":m$(2)="Load a
 File":m$(3)="List File Contents":m$(4)="Search fo
r a record":m$(5)="Print Records":m$(6)="Save file
":m$(7)="Add records to file":f$="":d$="":rc=1
20 MODE 1:PEN 3:PRINT TAB(12)"The Record Files":PE
N 1:FOR f=1 TO m:LOCATE 3,2+f*2:PRINT f;"- ";m$(f)
:NEXT:LOCATE 10,5+f*2:PRINT"Select 1 -";m:PEN 2:LO
CATE 39-LEN(f$),25:PRINT f$:LOCATE 20,25:PRINT rc-
1:IF d$<>"" THEN LOCATE 1,25:PRINT"Created:";d$
30 i$=UPPER$(INKEY$):IF i$="" THEN 30 ELSE i=VAL(i
$):IF i>m THEN 30 ELSE CLS:LOCATE 20-LEN(m$(i))/2,
1:PRINT m$(i):ON i GOTO 40,40,50,60,80,80,90
40 CAT:GOSUB 100:IF i=1 THEN OPENOUT f$:WRITE#9,d$
:CLOSEOUT:PRINT:CAT:PRINT,,,"Okay. Press a key.":
WHILE INKEY$="":WEND:GOTO 20 ELSE OPENIN f$:INPUT#
9,d$:rc=0:WHILE NOT EOF:rc=rc+1:INPUT#9,r$(rc):WEN
D:CLOSEIN:PRINT,,,"Okay.":WHILE INKEY$="":WEND:GO
TO 20
50 PRINT:PRINT"File:";f$;TAB(22)"Created:";d$:FOR
f=1 TO rc STEP 15:WINDOW 1,40,5,20:CLS:WINDOW 1,40
,1,25:FOR g=f TO f+14:LOCATE 1,g-f+5:PRINT TAB(1)g
;TAB(8)r$(g):NEXT:PRINT:PRINT"Okay. Press a key.":
WHILE INKEY$="":WEND:NEXT:GOTO 20
60 PEN 2:PRINT:INPUT"Enter name :",s$:s$=UPPER$(s$
):IF s$="" THEN 60 ELSE PRINT:FOR j=1 TO rc:FOR k=
1 TO LEN(r$(j)):IF LEN(s$)-2+k<LEN(r$(j)) AND MID$
(UPPER$(r$(j)),k,LEN(s$))=s$ THEN PRINT TAB(1)j;TA
B(8)r$(j)
70 NEXT k,j:PRINT:PRINT"Okay. Press a key.":WHILE
INKEY$="":WEND:GOTO 20
80 IF i=5 THEN PRINT#8,"File:";f$;TAB(22)"Created:
";d$:FOR f=1 TO rc:PRINT#8,TAB(2)f;TAB(6)r$(f):NEX
T:GOTO 20 ELSE OPENOUT f$:WRITE#9,d$:FOR f=1 TO rc
:WRITE#9,r$(f):NEXT:CLOSEOUT:PRINT,,,"Saved.":WHI
LE INKEY$="":WEND:GOTO 20
90 PRINT "(0=Exit) "rc;TAB(16);:INPUT "",r$(rc):IF
 r$(rc)="0" THEN CLS:i=3:LOCATE 20-LEN(m$(i))/2,1:
PRINT m$(i):GOTO 50 ELSE rc=rc+1:GOTO 90
100 PRINT:INPUT"Enter Filename [8] : ",f$:f$=MID$(
f$,1,8)+".rec":PRINT:IF i<>1 THEN RETURN ELSE PRIN
T:INPUT"Enter Date [dd.mm.yy] : ",d$:d$=MID$(d$,1,
8):PRINT:RETURN
```

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2 Player Super League	£3.99
1942	£2.99
Ace	£1.99
Ace 1 and 2	£2.99
Afterburner	£3.99
Airwolf	£2.99
A.P.B.	£3.99
Arkanoid	£3.99
Arkanoid Revenge of Doh	£3.99
Backgammon	£2.99
Barbarian	£2.99
Barbarian 2	£3.99
Beach Head 1 & 2 & Raid-Moscow	£4.99
Bombjack 1 or 2	£2.99
Boulderdash 1 or 4	£2.99
The Boxer	£3.99
Boxing Manager	£3.99
British Super League Football	£3.99
Buggy Boy	£2.99
California Games	£3.99
Championship Golf	£3.99
Chuck Yeager	£2.99
Chuckie Egg 1 or 2	£3.99
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THE TECHIE BIT

Welcome to this month's technical section. If you need help with your latest machine code masterpiece, or are having problems learning assembly language, then drop me a line and it's highly likely that you'll see a solution appear in these pages over the coming months.

The fact that you're reading this column probably means you've outgrown BASIC but, as BASICs go, Locomotive Software did a pretty amazing job at implementing it on our beloved CPCs. It's undoubtedly the most comprehensive version found on any 8-bit home computer, and includes many features which even some of the more expensive machines lack. One of Locomotive Basic's most powerful features is its ability to handle extra commands, created by the user. These RSXs (Resident System eXtensions), as they're called, allow a whole range of specialist commands to be added – be it for drawing circles, moving sprites, or for improving file handling.

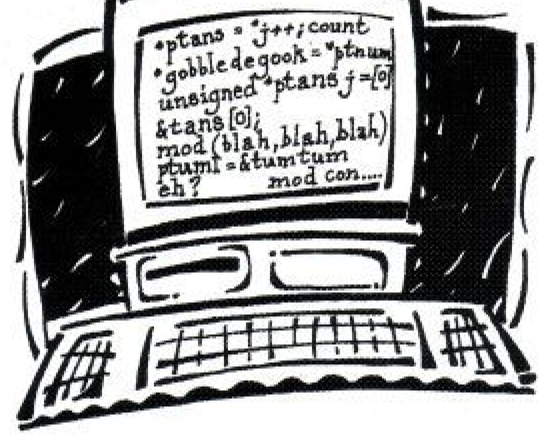
Once you've grasped the basics (no pun intended here) of machine code, implementing RSXs is a piece of... er... a doddle. Cast your beady eyes over the problem overleaf. What this code does is to create two new BASIC commands, :EXPLODE and :PAUSE,n. Stand well back when you execute the first one! – only kidding, it simply makes a noise. The second command creates a pause, the length of which depends on the value of 'n'.

OK, so perhaps these aren't the most earth shattering commands you've ever encountered, but they do demonstrate how RSXs are set up. In fact, it is only really the first fifteen lines or so of code that you actually need to create the RSXs.

The kernel routine 'LOG EXT' logs in new commands, but several conditions must first be met before this will work. Firstly, HL must point to four bytes which the system can use as a permanent work area. The second condition is that BC should point to a command table, containing precise details about the RSXs you wish to create.

The first two bytes of the command table need to contain the address of the name table, followed by a series of three byte jump instructions for the routine that each RSX will finally execute.

The name table simply lists the name of each RSX (in upper case) in the same order as the jump instructions. Note that the last character of each name must have 128 added to it, and that the name table is terminated by a zero byte.



Come on everybody, let's do the hexadecimal as Simon Watson prepares us for our first MC program.

Having done all this, the only thing that's left is to write the code for each RSX to execute. When these routines finally get called, register A will initially contain the number of parameters passed by BASIC. It's a good idea to immediately check this number and jump to an error routine if the wrong number of parameters has been used. In the example listing, :EXPLODE doesn't use any parameters, whereas :PAUSE uses one.

If one or more parameters occur, register IX will point to the address of the first one in a similar way to when a CALL command is issued from BASIC. Two final points, even though the RSX names are entered in upper case they can still be issued in lower case; and a comma must separate the first parameter from the RSX name e.g. :PAUSE,4 as opposed to :PAUSE 4.

Don't forget to keep writing in with your requests/suggestions for the column. See you next issue!

Hex Education (Machine code tutorial – part 2)

The CPC, like most other computers, has two types of memory at its disposal – ROM (Read Only Memory) and RAM (Random Access Memory). The information in a ROM is permanent and cannot be changed. This is why it is used to store Locomotive Basic, AMSDOS, and all the other system routines which are essential to your computer's general well-being.

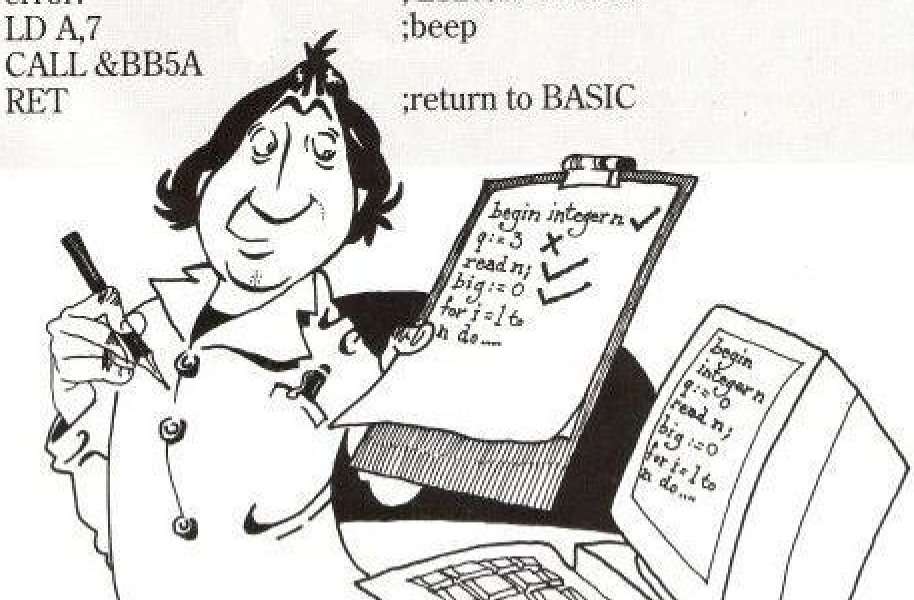
RAM, on the other hand, can be written to but is only temporary. Its use is as a general work area for programs that are loaded in from tape/disk, or even typed in from the keyboard. As many of you will have found out to your cost, information in the machine's RAM is lost when you turn it off.

The computer's RAM is the area that we will be using to write and test our machine code programs. So just how difficult is it to transfer numbers to and from this mysterious RAM? Not very. From BASIC, the commands to use are POKE and PEEK. To put 5 into memory location number, type POKE 10000, 5. Similarly, type PRINT PEEK (10000) to retrieve the num ber 5. The number of a memory location, in our case 10000, is called its address. Remember that each memory location can only hold one byte (8 bits) of information. This simply corresponds to numbers between 0 and 255.

As we mentioned last month, our CPCs have 65536 memory locations (starting with location 0) but not all are available for our machine code programs. The last 16384 locations are used for holding information concerning the video display. Basically, a special silicon chip inside the machine is constantly scanning these particular locations, and using the information in them to build up the picture on the screen. To see this happening, clear the screen and POKE some numbers into any addresses from 49152 to 65535, watching what happens. You should notice that different addresses correspond to different pixels on the screen, the colour of which is determined by the number placed in the address.

Other addresses immediately below 49152 are also used by the system and should be avoided. Typing PRINT

```
ORG &8000
LD HL, work_space          ;point to work space
LD BC, command_table       ;point to command table
CALL &BCD1                 ;KL_LOG_EXT
RET                        ;exit
command_table;
DW name _table             ;address of name table
JP routine1                ;jump to each routine
JP routine2
name_table:
DB "EXPLOD", "E"+128       ;name of each command
DB "PAUS", "E"+128
DB 0
work_space:
DB 0,0,0,0                 ;four free bytes
routine1:                  ;'EXPLODE' routine
OR A                       ;check number of parameters
JP NZ, error               ;jump to 'error' if not zero
LD D,0                     ;create sound effect
LD HL, data
loop1:
LD A, (HL)
INC HL
LD C, (HL)
INC HL
CALL &BD34
INC D
LD A, D
CP 7
RET Z                      ;return to BASIC
JP loop1
data:                      ;information for sound effect
DB 6,31,7,7,8,16,9,16
DB 10,16,12,100,13,0
routine2:                  ;'PAUSE' routine
CP 1                       ;check number of parameters
JP NZ, error               ;jump to 'error' if not one
LD B, (IX+0)               ;get first parameter
loop2;                     ;create necessary delay
LD HL, 65535
loop3:
DEC HL
LD A, H
OR L
JP NZ, loop3
DJNZ loop2
RET                        ;return to BASIC
error:                     ;'ERROR' routine
LD A,7                     ;beep
CALL &BB5A
RET                        ;return to BASIC
```



HIMEM will tell you the highest address you may use. BASIC programs are stored in addresses 368 upwards so it's best to choose much higher addresses (but still below HIMEM) to avoid any conflicts.

Anyone who becomes interested in computers will soon notice how certain numbers seem to occur fairly regularly. In particular, powers of 2 e.g. 1, 2, 4, 8, 16 ,32, 64, 128, 256... seem to be firm favourites. Indeed, this very article is a culprit, citing numbers such as 65536 and 16384. Why should these sort of numbers, which after all are pretty obscure, appear with such abundance?

The answer lies in the counting system that computers use. As humans, we are used to base 10 (denary) which uses ten digits 0 to 9 for the very simple reason that we ourselves have ten digits/fingers. Digital computers much prefer base 2 (binary) because they're used to encountering on/off voltages which correspond to the digits 1 and 0. Conversion between the two is very easy and is handled transparently by BASIC. However, when programming in m/c you're conversing directly with the machine and so being able to use binary is a definite must.

Consider the number 123 base 10. The first column is for hundreds (10 to the power of 2), the second for tens (10 to the power 1), and the third for ones (10 to the power 0). The total value is given by each digit multiplied by the value of its column i.e. 1x100 + 2x10 + 3x1 = 123.

Now consider the number 1111011 base 2. This time the columns correspond to 64, 32, 16, 8, 4, 2, 1 – decreasing powers of two instead of ten. The value in base 10 of this number is found using the same method as before: 1 x 64 + 1 x32 + 1 x16 + 1x8 + 0x4 + 1x2 + 1x1 = 123.

Practice using binary, and converting numbers to and from base 10 by hand. Check your results with the following BASIC commands, altering the numbers accordingly.

For base10 to base2 conversion: PRINT BIN$ (123)

For base2 to base10 conversion: PRINT &X1111011

Next month we'll take a look at the uses of base 16 (hexadecimal), and write our first m/c program!

The Dungeon Master

In which DM gets mightily embarrassed but rallies with some epic hints and tips.



Following on from my report last month about the demise of the Adventurers Club Ltd, comes some excellent news from Sue Roseblade. Sue, along with two other ex-members of the above club, have now formed The Adventure & Strategy Club. The club will continue in a similar style, quality and format as before but will be under entirely new management. The first issue of the bi-monthly *Reference Book of Adventure* will be published in September. You can get further details of the club by contacting: 17 Sheridan Road, London. E12 6QT. Tel: 081 470 8563.

Joan Pancott is well known to you as a regular contributor to my *Scrolls of Wisdom* and also for her software business WOW. During a recent conversation, Joan was telling me that she has offered an adventure helpline for a number of years and that she has kept a record of every time that she has been asked for help. I was astounded when she told me that the total number of letters and/or telephone calls for help logged was now over 8,500. Joan went on to say that many of these callers ring more than once and eventually they become good friends. So there you have it. Start a helpline and gain many new friends. Perhaps we ought to adopt a new motto – 'Adventurer's do it together'?

Dave Havard has sent me a copy of his reprinted book *A Beginner's Guide To Adventurers*. This, as the title suggests, is the perfect introduction to hobbit bashing and treasure troughing. It normally retails at £3 but those awfully nice people at Atlas Adventure Software say that if you mention the Dungeon Master, you can buy it for only £2.50. Send off now to: 67 Lloyd Street, Llandudno, Gwynedd. LL30 2YP.

Could anything ever make the Dungeon Master blush? I would not have thought so until this letter arrived from a very famous adventurer and magazine editor. I shall now disappear and have another quick blush whilst you read it:

Dear Dungeon Master,

First of all, my apologies for taking so long in writing to welcome you and very welcome you are indeed? I was delighted to see the new adventure column appear in *Amstrad Computer User*, and even more so upon reading it, to see what an excellent column it was. You seem to cover all aspects of Amstrad adventuring and I found it stimulating, informative and very entertaining indeed.

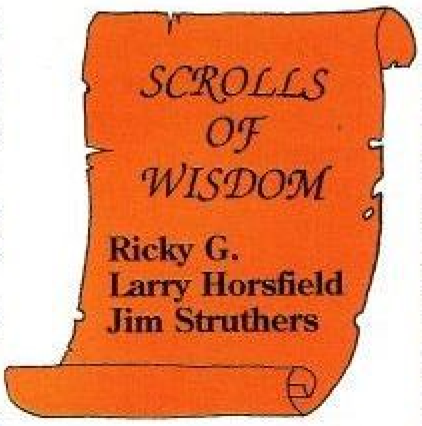
Congratulations on bringing a breath of freshness to the world of adventuring. Your style brings back those early days of adventuring when everything was new and exciting and when dinosaurs like me used to get so excited as each new adventuring challenge came along. It made me feel quite nostalgic. After adventures on the Amstrad took a slightly downward turn last year, I am delighted to see so many brand new adventures appearing for the CPC and I hope that with the wealth of new material to write about, you will be with us in the column for many years to come.

I am further delighted to see that not only are you covering all the major new releases in your column but that you are also giving plenty of space to the smaller software companies and their products. So often these days, an excellent home produced adventure has been passed over in the glossy magazines just because it is not produced by a well-known company. So very well done indeed. I sincerely hope that your readers will continue to give you all the support that you could wish for, so as to ensure that the column and adventures on the Amstrad will flourish for many, many years.

Mandy Rodrigues. Editor: *Adventure Probe.*

Thank you very much Mandy for writing in such glowing terms. I feel extremely proud to receive praise from such an eminent person as yourself. I would also like to add my congratulations for Adventure Probe just passing its fifth birthday. This is a rare (unique?) achievement for a monthly home-produced magazine and I can vouch for the fact that it has never missed an issue. Well done. Now what is all this about dinosaurs?

Talking of letters received here at the dungeon, I am very happy to report that the amount of mail addressed to this column is growing monthly, a sure sign that the CPC adventure scene is alive and well. Although I do not have room to print every letter on these pages, please be assured that every one is read and any relevant points concerning the column are noted and 'where possible' acted upon. It seems that the majority of writers would like to read a regular supply of hints and tips. Well, as most of the adventure writer's seem to be still playing on the beach with their buckets and spades, I have decided to make the rest of this month's article into a hints and tips special. This of course is only possible



because o kind rea who have l bombarc me with necessary vice to onto you.

First up Ricky G (?) with some tips for the **Quest For The Golden Eggcup**:-

1) Wave the wand to cross the crevasse. 2) Release the caged bird to get rid of the guardian. 3) Examine the straw near the river. 4) Show the card to the ferryman to return. 5) To escape from God's dungeon try digging in the sand. 6) In the caves of hell go north. If you can't go north, go east. 7) The key is in a bag in the caves of hell. 8) Fill the tree with useless objects and clothes to get the bronze egg.

Larry Horsfield has lots of advice for starting and completing the **Village Of Lost Souls**:-



1) Get rid of the dogs and the crow. Note that the latter will steal one of your possessions each time it swoops down. You can recover these but to avoid this, drop everything when you see the crow circling overhead. 2) To get rid of the dogs, drop a ham when they turn up.

3) The next task is to put out the fire in the hut before the person inside dies. He will die anyway but if you can put out the fire quickly enough, he will give you some useful information (which will add to your score.) Once these three tasks are complete, you are free to roam around at will. 4) Repair the plough in the forge using the three parts. You must light and then pump up the forge to make it hotter. 5) Harness the oxen, lead them to the Manor field, attach the plough and then plough the field. 6) There is a hidden location above the church bell platform – just go up again. 7) Pray at the altar for instructions to gain points. 8) The tiny well SW and SE of the rose arbour is the one you must go down. Make sure you have all you need first. 9) Don't venture down the pit in the Manor house until you have performed some magic. 10) Examine the barrels in the buttery. One of them is untapped – a clue to what the mallet is for. 11) In the lab, read the grimoire. The shape is a pentacle and you must be inside it before invoking a name. 11) To get out of the pit – wear the gauntlets, examine the wall, then push it. 12) To open the door with the ear – play a tune and then wear the gauntlets again. Before you go in, throw some water. 13) Jump in a particular direction to get across the windy crevice. 14) To get past the Red Satyr – you must disguise yourself. 15) In order to open the beehive, you must be wearing some protective clothing. To subdue the bees, smoke a pipe. 16) To get across the river – climb the tree opposite the water-mill but have the kid and paddle with you. 17) Rub the glass rod with the wisp of fleece to get the black key. 18) Dig more than once in the vegetable garden. 19) The cabbage patch is S then SE of the apple tree, west of the trellis. 20) To get to the area of ash – go south four times and SW twice from where you start. 21) Wave the staff to produce a flame to light things with. Break it to reveal the chalk. 22) You can put things in the sack to carry more. 23) Examine the floor of the Tinker's wagon to find a couple of things.

Jim Struthers has also been extremely busy and has supplied me with several sheets of clues, reviews and tips. Great stuff Jim and please keep it coming everybody.

Jim's latest offerings are as follows:-

The Guardian:-

1) Examine the pool. 2) The cloak is important so do not throw it away. 3) Read the inscription at the bottom of the steps for an important clue. 4) Don't take the crystal out of the room. 5) You need to answer two riddles at the gates. 6) Get the Krakens teeth. 7) Untie the rope on the cage. 8) Kill the warrior.

Total Reality Delusion:-

1) Examine the scarecrow. 2) Carry the woodlouse. 3) Examine the ghetto blaster. 4) Drinking beer does funny things to you. 5) Carry the bridge.

Storm Mountain:-

1) Make a raft. 2) Blow up the door. 3) Wear special shoes. 4) Catch the bird. 5) The treasures you need are – horseshoe, emerald, gem, ring, feather, shield and crown.

Project Volcano:-

1) Fish to get some rubber boots. 2) Unscrew the grille. 3) Shoot the droids. 4) Read the plan. 5) The pliers are useful.

Well I hope that I've covered your particular problem in the above selection but if not, you should know by now what you need to do. Just write in and tell me the title of the game and where you are stuck. Then as if by magic, the answer will appear in these pages. Larry Horsfield has suggested that the address to write in to should appear at the end of every article. This struck me as being a good idea and as long as Chris (he who must be obeyed) Knight agrees as well, the address will be printed at the end of my wonderful prose each month from now on.

So until next month, happy adventuring.

Please send all correspondence, hints, complaints, money, etc to: The Dungeon Master. C/o Amstrad Computer User, Sunnyside Cottage, Carluddon, St Austell, Cornwall PL26 8TY.



In the face of rising fury, Hairy is forced to do a u-Turn on his recent Dizzy decision

Lordy lumpkins! It's enough to make you want to go and eat your own cooking, you know. What am I talking about? Dizzy demands of course.

It seems that no sooner has a month gone by without reference to Dizzy solutions, than the hotlines start buzzing in our precious ed's ear, demanding to know why?

Ah well, if you can't beat 'em, is what I say. So, to keep you legions of Dizzy fans happy, here's a little something that should keep you quiet for a brave while. In effect, it's the ultimate crib sheet for *Magicland Dizzy.*

Simply follow these instructions to the word, and you'll find yourself whizzing out of the other side of the game, wondering where on Earth it disappeared to. Here goes!

L= Left: R=Right: U=Up: D=Down.

L, take key, L, L, jump over well, L. Go across water on Shark's fin, use key, drop milk bottle, L, get handle, go up staircase, L, L, U, get power pill, D, R, R, R. Jump onto window still, jump onto the cloud avoiding the bat, jump right, fall onto the top of the well, jump right, jump left, take duster off cloud, fall off cloud, D. Stay on left side of the well, use handle, take bucket, drop duster, jump over well, R, R, R, R, Kill ghosts, jump across lily pads, take Dora Frog, R, talk to Glenda, R, cross the lily pads attempting to avoid the mosquitoes, fill bucket, L. Get Drink Me potion, go back to the Grand Hall, drop everything except Dora, L, give Dora to Prince Charming, R, up staircase, R. Jump across to the top of the well, jump right twice, take stick, U, go to the middle of the top right platform, jump right, collect the black cat. Jump right off the edge, take dagger, jump left twice, go to Glenda, give her the cat. Go to the Grand Hall cutting a leaf from Dylan's bush with the dagger on the way but DO NOT pick it up. Collect the bucket, L, L, start the drawbridge, L, L, L, cut the goat's rope with the dagger, hit goat with stick, L, L, drop bucket on Denzil. Take stereo back to the Hall and drop it, take the Drink Me potion, U, go to the window sill, Jump left onto the top of the bed, jump left off the edge, U, U, collect lightning rod, out of the window, L. Drop rod onto Dozy, L, L, L, L, D, D, the cross will make vampire stay away but you can't avoid the bat. Take the torch, R, drop potion onto Daisy, L, U, U, R, R, R, R, collect apple, drop cross, go to Dylan. Collect leaf, go to Glenda, give all the three items to her, take the potion. Go to Dylan, use potion on Dylan, go to the hall collecting cloth on the way, drop cloth in hall, collect stereo, U, L, L, jump out of window, D, jump left off the platform, U, jump right, jump right, jump left, drop stereo next to the Bard. Take the pipes, go to the well, go onto the right side and fall left. Jump right, play the pipes, wait for the rat to go, jump left, L, collect something sticky, L, collect lamp, U, drop pipes, take cloth, go to the sword in the stone. Take Excalibur to make you a King Dizzy, L, drop lamp, use duster on lamp to free Dozy, drop duster, go to the ice castle, Jump left, U, U, jump left off the edge of the top left ledge, D, go into the mirror. Your controls are now reversed, kill Queen (you have to be a king to do this), L, avoid pawns, save Grand Dizzy, go to volcano, jump across using the smoke clouds, R, D, D. Go to the Devil, take trident that he gives you, go back to Zaks at the top of the ice castle, avoid his lightning. Drop the trident on him, take the ring, go to the Devil, L, jump left to the middle stone, drop the ring into the lava, R, go to the devil. You now have to find all 30 diamonds and return them to the devil to finish the game.

Got all that? I hope so, because I'm

BACK BY PUBLIC DEMAND



certainly not about to repeat it for the hard of hearing. By the way, all of that was the hard work of Daniel Prest, he of the keypress pokes of a little while back, and I think it would be quite safe to say that he has played Magicland Dizzy once or twice.

Stopping to catch our breaths for a moment, here are a couple of handy hints sent in by Tom Ash from Bingley. Isn't that half a building society?

Never mind, on LED storm, if you jump up onto the sandhills, which loom up on either side of you on Level 2, you will suddenly turn small and become invincible to anything else on that level.

Next up, if you're into that gem of a game Flimbo's Quest, you would be advised to buy the super weapon on level one. Then climb up the ladder that is a few screens to the right of the shop.

Hoards of baddies will waddle along the platforms, but they will not be able to touch you.

If you blast them all, you will be left with hundreds of coins, so you can make as much dosh as you like. Not bad, eh? By the way, if you feel you are running out of time, simply buy some more, although this may take a while.

There you have it, and now to some much more serious stuff as we enter Graham Smith's favourite domain, the pokette!

Starting off this month, we've got a superb all-rounder *a la* Smith, in the form of a choice of infinite lives, infinite ammo, no soldiers or invulnerability for that all-time epic *Ikari Warriors*.

This one's for the Encore tape version and should help you to knock hell out of the bad guys in no time at all. Here it is:

```
1    ' Ikari Warriors
2    ' By Graham Smith
3    ' Choice of infinite lives,
4    ' infinite ammo, no soldiers
5    ' and Invulnerability
6    ' Encore tape version
7    '
10   DATA 18, 09, af, 67, 6c, 32, 14
20   DATA 69, 22, 15, 69, 18, 05, 3e
30   DATA c9, 32, a0, 1f, 18, 05, 3e
40   DATA 18, 32, 38, 6a, 18, 05, 3e
50   DATA c9, 32, 61, 18, c3, d0, ff
60   DATA 48641, Infinite lives
70   DATA 48652, Infinite ammo
80   DATA 48659, Invulnerability
90   DATA 48666, No soldiers
100  DATA 13, 6, 3, 15, 16, 0, 1, 2, 14
110  DATA 26, 24, 9, 12, 21, 22, 19
120  MODE 1: DEFSTR a-b
130  FOR j=0 TO 34: READ a
140  x=VAL ("&"+a): y=y+x
150  POKE j+48640, x: NEXT j
160  IF Y<>2735 GOTO 320
170  FOR j=0 TO 3: GOSUB 260
180  NEXT j: MODE 0: BORDER 2
190  FOR j=0 TO 15: READ x
200  INK j, x: NEXT j: OPENOUT "d"
210  MEMORY 4777: CLOSEOUT
220  PRINT "`press PLAY then"
230  PRINT "any key": CALL 47896
240  LOAD"! screen.bin
250  LOAD"!warriors": CALL 48640
260  READ x: READ a: PRINT
270  PRINT a; "? (y/n)";
280  INPUT b: IF b="n" GOTO 310
290  IF b<>"y" GOTO 270
300  POKE x, 0
310  RETURN
320  PRINT "data error
```

How did that fill your slippers? Just right I bet. Next up is a little something that should help out all you sufferers on *Lords of Chaos*. Again, this is for the tape version and it gives you infinite experience, much needed if you want to survive in this hostile environment.

```
1    ' Lords of Chaos (tape)
2    ' By Graham Smith
3    ' Infinite experience
4    '
10   DATA 21, 00, 00, 22, de, 96
20   DATA 22, ea, 98, c3, 72, 8a
30   DATA 21, 4e, 9f, 22, e0, a0
40   FOR j=0 TO 17: READ a$
50   x=VAL ("&"+a$): y=y+x
60   POKE 40782+j, x: NEXT j
70   IF y<>1994 GOTO 100
80   LOAD "": MODE 1
90   CALL 40794
100  PRINT " data error
```

Talking of hostile environments, my cleaning lady has been refusing even to look at my bedrom of late, so how `I'm going to get in and sort out next month's goodies, I don't know. Even my socks are beginning to walk out in protest.

You could say it's become the domain of the devil himself, which means I've created yet another extremely tenuous link to bring in our next pokette. Yep, you've guessed it, it's for that old gem *Satan*.

In a very nifty bit of programming, Graham's managed to get in infinite lives and time for Part 1, as well as the code for infinite time, energy and wizards for Part 2. Very, very handy this, and it should give you a whole new lease of adventuring life. Run this little lot before you play the disc version and try it for size.

```
1    ' Satan (disc)
2    ' By Graham Smith
3    ' Part 1 Infinite lives & time
4    ' Part 2 Infinite time, energy
5    '          & wizards
6    ' Code for part 2 is 01020304
7    '
10   DATA 84, 21, b0, 00, cd, d4, bc, 79
20   DATA 22, 60, 00, 32, 62, 00, 21, 00
30   DATA 01, 11, 00, 00, 0e, 41, df, 60
40   DATA 00, 21, f2, 00, 22, cc, 01, 21
50   DATA d7, 00, 22, 10, 02, 18, 29, 3e
60   DATA ed, 21, e9, 6e, be, 3e, c9, 20
70   DATA 07, 77; af, 32, 18, 62, 18, 09
80   DATA 32, 80, 5e, 32, 96, 65, 32, 08
90   DATA 66, c3,: FOR j=176 TO 241
100  READ a$:x=VAL ("&"+a$): y=y+x
110  POKE j, x: NEXT j: MODE 1
120  IF y<>5267 GOTO 160
130  PRINT "`Insert game disk";
140  PRINT "then press any key"
150  CALL 47896: CALL 176
160  PRINT "data error
```

Finishing off this month, here's a special proggy from Stephen Matthews, who is determined to get in on the act with this handy *Bomb Jack 2* poke. This'll get you 255 lives and if you can't get through it with this, you'd better get back to the drawing board and redevise your gaming strategy.

```
1    ' BOMB JACK 2
2    ' 255 lives
3    ' By Stephen Matthews
4    ' TAPE METHOD 1
5    ' Leave Out 9 If You DON'T
       Own a DISC DRIVE!
6    '
9    lTAPE
10   MEMORY 5799
20   BORDER 0:CLS
30   FOR f=0 TO 15:READ a:INK f,a:
     NEXT f
40   MODE 0:LOAD "!b2 screen.bin",
     49152
50   LOAD "!b2code.bin", 5980
60   POKE &2E8,&FF:' 255 Lives
70   CALL 6000
80   DATA 0, 26, 1, 8, 11, 10, 14, 5, 20, 15,
     21, 25, 6, 3, 12, 24
```

Well, I think that's quite enough excitement for one month. It is for me, anyway. I've just got back from my hols in Outer Bikini land, and it always takes me a while to get the old eyes back in focus and the tongue back in my mouth.

To finish off, try this one for size. What's the difference between Saddam Hussain and a baked bean? Answer: Nothing, they are both stockpiling potentially explosive material!

On that note, I think I'd better take my leave and see to my bedroom. Bye for now.

Setting up a Bulletin Board System can be fun, but you'll need to follow a few pointers, as Nick Hutton explains.

HOW TO BE A SYSOP

Anyone who owns a computer, at some point during his or her life, wonders about buying a modem and getting into that exclusive world of communications. In most cases the only thing stopping you is the nagging thought of some massive phone bill which would make the national debt of Mexico look like your grannie's pension. Wouldn't it be nice if you didn't have to dial out much, if people would come to you for files and messages.

Of course the sort of setup I'm talking about is a bulletin board.

Running a bulletin board is the one sure way to get right into the world of comms with low running costs. The original outlay for the BBS computer may be quite large (I will detail the necessary components later) but once you are finally up and running there is very little else to pay for.

However running your own board is far from easy. Firstly you may have quite a few problems in getting the hardware you require (at a decent price), then there are the almost endless problems which arise with modems. Then of course there is the actual software which will run the board for you, the host program as it's called.

There are other considerations to be made and in the following article I will go over the necessary information any would-be sysop (System operator) would require.

So just what are the merits of running your own board? Well as I have already mentioned you won't be beset by massive phone bills (hopefully). There is also the 'Club' feeling and good-will which almost all sysops exhibit toward their fellow colleagues.

If you have a problem with your modem or software then 90 percent of the time you can get in touch with a helpful sysop who has experienced the problem himself and sorted it out. It's this team spirit which seems to make it all worthwhile. Also of course the users of your board will be grateful.

But before you set up your board you will need several things.

A computer

This is the most important part of your board. It needs to be reliable, reasonably fast and reasonably well supported software wise. Of course it does not have to be a CPC, take Maxwell House for example, that is run from a PC.

Before setting up your board you should be as adept at using your machine as possible. If you intend to run a 24-hours-a-day service then obviously reliability is very important. Your machine should be well ventilated and stored somewhere out of the way if possible.

My board is run from an Archimedes A310. In order to keep it all cool it is fitted with two fans. Remember, if your board is constantly tripping over then you'll end up with a lot of frustrated users.

Boards can be run from almost any machine. There is a piece of software available for the CPC. If you really want to run a board of any reasonable size then I suggest you choose a more powerful machine.

Many boards these days are run from a simple cheap old PC XT. The software is available in profusion and is generally of a high standard (see PC software list at the end of this article).

However, remember if you intend running a 24 hours service then unless your machine can multitask (run more than one program at once, e.g. in the background or under interrupt) then you will not be able to use the computer when the board software is running. For the above task I really recommend an IBM 386SX (these can be purchased quite cheaply) with 2-4 megabytes of RAM. If your computer can multitask then it will allow you to get on with other jobs while the board is running, for example checking out the latest piece of software somebody just uploaded. Before your computer will multitask, it will require a suitable program manager (see PC software at end of article).

Unfortunately the CPC cannot multitask and so you will have to give up your machine during the hours of board operation. If you do intend using the CPC then you will of course need a serial interface as this is not provided as standard with the machine. Serial interfaces can be picked up quite cheaply from mail order firms but a second-hand device is probably just as good as they are not the sort of thing to wear out. If you are feeling adventurous then why not build one yourself? The parts can be purchased for about twelve pounds from Maplin Electronics and the layout is really not that complex. In fact some time ago there was an article in this very magazine detailing the construction of an RS232.

I will tackle storage media as a separate unit from the main computer system, as this warrants a lot of care and consideration.

If you intend to use your CPC then you could have problems with regard to the amount of data which the system will be able to supply at any one time.

If you use a 3.5" second drive (the minimum requirement for serious users) then it is possible to squeeze about 1 megabyte (1024K) out of a single disc. You see it is not really a viable option to switch between several discs when a user requests a file which is not on the currently inserted disc. After having spoken to several CPC sysops the general consensus of opinion is that there is only just enough room on one 3.5" disc. A much better option would be to buy the CPC hard drive (horribly expensive, I'm sad to say), this way you would have no storage problems whatsoever.

On other more expensive machines the options are a little wider. For the IBM PC compatible there are a wide variety of hard drives available, varying from 20Mb (twenty thousand K) right up to 3Gb (that's three million K). The latter size of drive is very expensive and not often used in this context.

Each hard drive belongs to a particular group. These groups represent the data encoding method and type of interface the drive uses. Some types are better than others but I don't want to

get into that argument here as you could write a book on the subject.

The reliability factor is very important here. If your drive breaks down, suffers a media crash, sheds a head, or burns out its stepper motor then you are in big trouble. The message is to spend as much as you can afford on your drive and back it up frequently. Failure to back up your drive will mean that if it does explode,or whatever, you will lose all your Bulletin Board data. Many a sysop has been reduced to a gibbering technophobe after finding out his pride and joy has just minced two years' worth of uploaded files and user messages.

For reasons of expandability, I use a 180Mb drive with SCSI interface. This sort of interface allows you to 'Daisy chain' up to seven SCSI devices together on one interface. A little like the way you can keep plugging memory, disc drives, silicon discs etc,. into the back of a CPC.

Your drive need not be very fast as no modem yet built will be able to move data as fast as it is read from even the slowest hard drive. Hard drives are by no means the only way to store your data these days.

CD ROMS are becoming more and more common and are dropping in price all the time. These wonderful little toys can store about 512Mb of data on one CD.

Of course they are ROMS and as such cannot be written to. However it is possible to buy pre-recorded information on the CD. Unfortunately the only computer database I have seen available is for the PC. Focal point have been using a CD for some time now and it contains 15,000 files, that's a whole PC shareware library ON ONE DISC. For prices see the end of this article, CD ROMS are slow when compared to the average hard drive but as I said before, speed is not really that important. At the moment CD ROMS are limited to use with the IBM compatible PC, the Apple Macintosh, the Commodore Amiga, and the Acorn Archimedes.

Next come the new generation of WORM drives. WORM drives are rewriteable optical media and so more flexible than a CD ROM, these drives are closely related, and more than a little similar, to CD ROMS but you can in fact write to them. In general they are not tremendously fast but are reliable and built to very high tolerances. They can hold as much data as a CD ROM. The greatest drawback with one of the WORM drives is undoubtedly the incredible price, (five thousand pounds gets you the bottom of the range model, with no furry dice or his and hers sunstrip).

Well that just about wraps it up for mass storage media. But before I move on there is just one more way to store your data, although it's incredible cost will make all but the average company chairman cringe.

I have recently discovered while talking to a friend at Seagate Technology (purveyers of fine hard drives) who brought my attention to their range of Solid State discs. A solid state disc is like the CPC silicon discs, a collection of memory chips which acts like another disc drive, but one which is extremely fast. The largest of these 'Drives'- is 167 Mbytes, and is not very large when compared to the biggest hard drives, however a device of this sort will cost you somewhere in the region of a thousand pounds, a snip!!!!

Today there are a vast array of (fairly) reasonably priced modems which range from a cheap 300 baud modem to a rather nippy 14400 baud speed modem with go faster stripes and a soft top.

But before you become totally confused with differentiating between v21 v23 and all the other standards, there are some features which your modem must have in order to run a bulletin board. These features should be at the top of your list and the 'frills' can be taken into consideration if you have the money or if your board is popular enough to need them.

Modems range from the simplest acoustic coupled devices right up to sophisticated self-correcting, lightning fast pieces of advanced technology costing more than some low end PCs. When selecting a modem to run a bulletin board it is essential to choose one which has an auto answer facility.

As far as speed is concerned try to select a modem which has at least 2400 baud (V22 bis) to run the bulletin board. If you can afford the more expensive v32 (9600 baud) or even the dual standard HST then go for it. Believe me it can get very frustrating waiting minutes on end for the latest batch of files to be downloaded. Gordon Bates (comms guru extraordinaire) also subscribes to this school of thought. You see if you run a faster service then you will be able to fit more calls into the time in which the board is open, also if you are looking for foreign contacts then they are going to be on a lot more if it doesn't take them ages and cost a fortune to upload a file. In fact I know of several people who don't even bother uploading anything unless the board has 2400 and MNP5 or V42 bis.

In short, your modem should be of a standard build, i.e. Hayes compatible, auto answer, as fast as you can afford, and of course reliable.

Software

You cannot run a board without some form of help; by help I mean your bulletin board host software. This clever piece of kit manages all user messages, passwords, files and their descriptions and a hundred other things. It is vital that you get a decent piece of software. Users will soon get fed up if it takes them ages to wade through all the menus and file areas. Your board must be accessible, friendly, and in short easy to maintain. Software need not be that expensive in fact much of the host software can be obtained FREE.

In this section I will give a brief round up of the pieces of software which I have come across. These are just my opinions and I strongly recommend that you at least get some hands-on use of the software you choose. Once you set up your board, upload the initial files and draw up a title block you don't want to find that the piece of software you have chosen just doesn't meet up to your expectations.

Unfortunately CPC software is a bit thin on the ground in this department but there are still packages available. One which I have seen is an old (and probably forgotten) CP/M package called Octopus BBS. This piece of software comes on a couple of discs and can be purchased from many a CP/M public domain library.

The best way to get information about host software on any machine is to consult with the sysops who use it. This can be done via something called Fidonet, modem users will know about it already but I'll leave Gordon to enlighten those of you who are still in the dark.

If you intend using a PC to run your board then as I said earlier, an old XT will suffice. There are a great many public domain host systems available to the user and all are effectively free.

Unfortunately, space has run away with us for this month, but next month I'll round up the software sequence and let you in on some of the prices you can expect to pay to get yourself up and running. See you then.

to be continued next month

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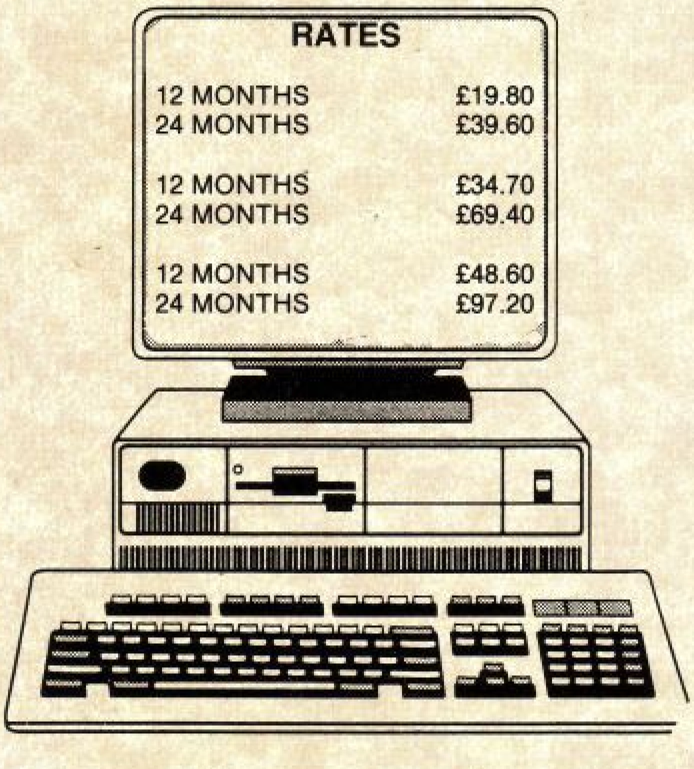
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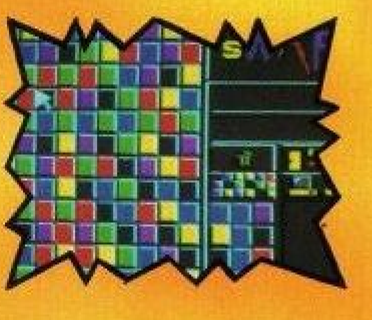
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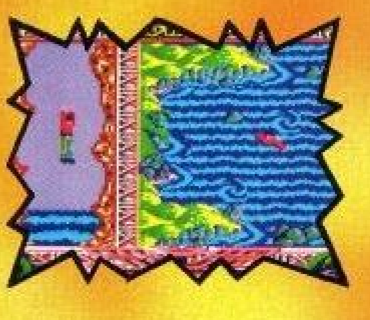
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1 (1) Dizzy Panic — Code Masters
2 (4) Quattro Cartoon — Code Masters
3 (NE) Bubble Bobble — Hit Squad
4 (5) Double Dragon — Mastertronic
5 (2) Magic Land Dizzy — Code Masters
6 (3) Dragon Ninja — Hit Squad
7 (10) Multimixx 1 Golf — Kixx
8 (NE) Red Heat — Hit Squad
9 (7) Cavemania — Atlantis
10 (13) Continental Circus — Mastertronic
11 (18) Dizzy Collection — Code Masters
12 (NE) Professional Footballer — D&H Games
13 (NE) Quattro Coin-Ops — Code Masters
14 (9) Quattro Firepower — Code Masters
15 (20) Teenage Mutant Hero Turtles — Mirrorsoft
16 (NE) Paperboy — Encore
17 (19) Scooby Doo & Scrappy Doo — Hitec Software
18 (12) Euro Boss — E&J
19 (8) Quattro Adventure Code Masters — Hitec Software
20 (6) Quattro Racers — Code Masters

Last month's position in brackets



Neverending Story II

A sequel to equal all sequals as Bastian battles to save Fantasia.

With the film licence to produce a sequel to the best selling Neverending Story, you'd think that this little offering would be a guaranteed winner. You wouldn't be far wrong.

If you've seen the film, then you'll know the plot of the game fairly well, as it follows the twists and turns of the plot pretty closely. If you haven't, then this is one belter of a game, featuring some superb graphics, that'll have you gripped to the gameplay from start to finish.

The childlike Empress needs Bastian's help again and it's up to you to provide it. Set over six amazingly different levels, your first task as Bastian Bux, is to find your way through to the Ship of Secret Plots, with the giants



hot on your tail in a fast moving, horizontal jump and run game.

Upon reaching the ship, your next duty is to chase the evil dragon Smerg through the canyons on your trusty steed Falkor. In this excellent 3D bitmap game, you must fly through the canyons, avoiding rockfalls and lightning as you attempt to crush the worm against the walls.

When Smerg has finally been dealt with, you will find yourself at the walls of Castle Horok. You must then find the safest route up the walls to free Altreyu and face the evil sorceress who is causing all of the emptiness in Fantasia.

Be careful, this is no easy climb. Success will lead you into a frantic spray-can fight with the giants, as you struggle to push them off the platform.

Next up on your hectic agenda, you must flee on the back of Artax through the Orchid Forest. Using parallax scrolling, you must avoid branches and rocks on your flight, as well as ducking the attacks from the birds above.

Be warned, only the very hardy will survive through to the final section taken from the film. Here you must throw yourself into the river and fight your way through to the other side.

Scattered throughout the torrent are particularly nasty rocks and, to make matters worse, there are plenty of vortexes and whirlpools which you must avoid if you want to stand any chance of making it to the other side.

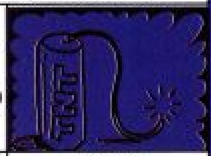
Think you can stand all of that? There is certainly no lack of action in this beautifully crafted sequel. In fact, there is almost too much at times and you'll have to be very, very quick to battle your way through to the later stages.

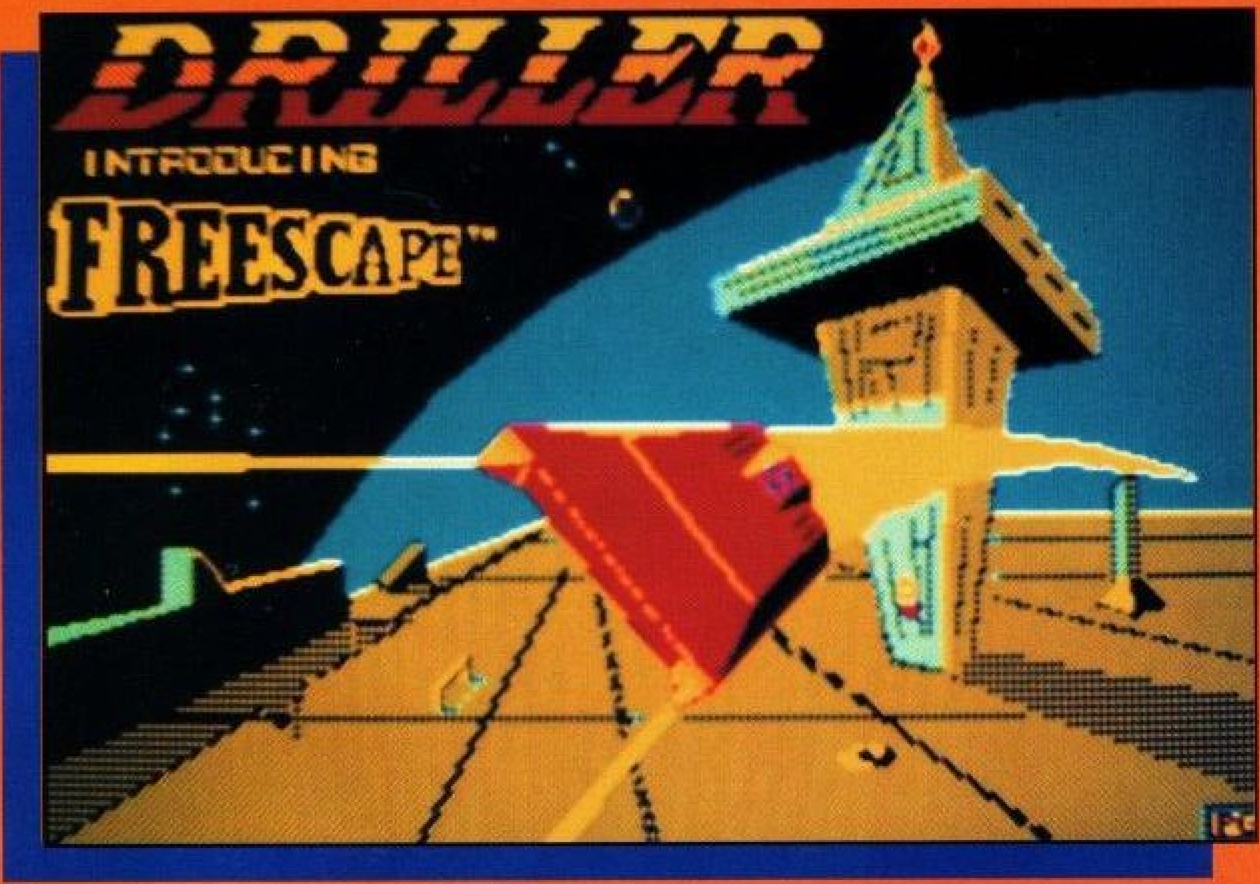
The variety of techniques used in the game, as well as the superb sound effects, make Neverending Story II an absolute must when it makes its appearance on the shelves.

Keep a look out for it and grab it when you can.

Jim Johnson



ROUND-UP			
NAME	Neverending Story II		
FROM	Linel	PRICE	Disc £14.99 Cassette £19.99
89%	86%	93%	
GRAFFIX	SONIX	PLAYABILITY	VERDICT





Virtual Worlds

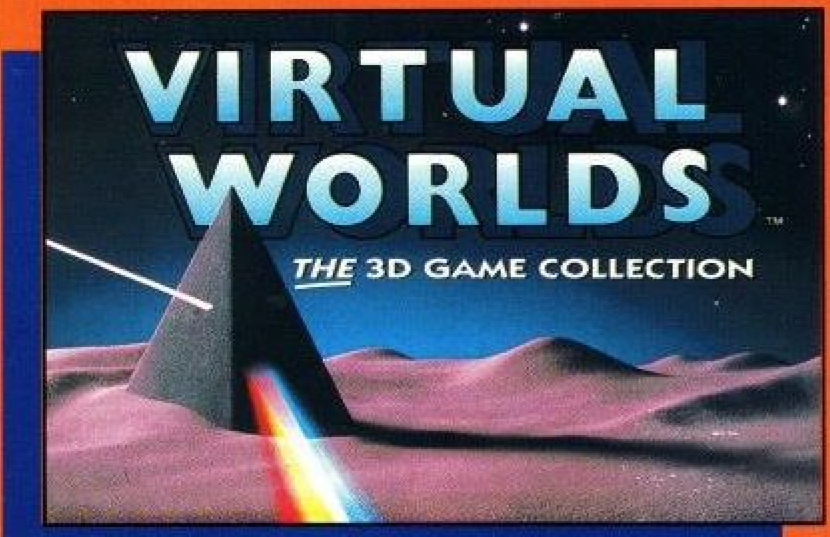
You've never had such an Incentive to go gaming.

In the relatively short time that they have been producing games on the CPC, those clever people at Incentive have worked up quite a reputation. Not surprising really, when you take into account the exceptional quality of those games, using the superb development systems Freescape and Freescape 2.

In terms of 3D gaming, Incentive's efforts are virtually untouchable. Any doubters need only take a quick look at this simply stunning collection to think again.

Starting the ball rolling is the nailbitingly tense race against time of *Driller*. With only hours to go before a meteor blows up the moon of Mitral, your job is to get down onto the surface and tap the lethal deposits which could amplify the explosion and knock your home planet of Evath off its axis, killing everybody with it.

Manoeuvring your way around the heavy defences of the outlawed Ketar peoples, you must locate the gas centres and set up rigs as fast as you can. Don't waste time or rigs and make sure you pick up plenty of rubicon crystals to replenish your power in this superb offering.



Speaking of lunar explosions, *Total Eclipse* sends you back to 1930's Egypt and another race against time. Outraged at his people's disrespect for the Sun God, Re, an ancient High Priest set up a shrine to the god atop a pyramid, vowing that if the sun should ever be blocked totally, the offending article would be destroyed.

You've guessed it, there's going to be a solar eclipse and it's your task to destroy the shrine before it sends thousands of meteorites speeding towards Earth. This is another nailbiter, with plenty of frantic action inside the pyramid as you desperately try to find your way to the top.

Another Incentive classic, *Castle Master*, also gets another airing on this superb compilation. As you try to rescue your twin from the heights of the spectre infested castle, take care not to be trapped, otherwise you too, will become a slave to the evil Magister.

The last offering on this collection is the previously unreleased sequel to Castle Master, *The Crypt*. Assuming that you failed the first quest, you are now imprisoned within the castle walls, and must battle with poltergeists, spirits and zombies as you attempt to make a dramatic bid for freedom.

Plenty of action and real adventure will keep you glued to the screen at all times in this brilliant sequel which is a winner in its own right.

The games included in the compilation are a must for serious gamesters, featuring the simply wonderful 3D Freescape techniques and some truly atmospheric action.

For real value for money, go out and get *Virtual Worlds* right away.

John Taylor

ROUND-UP			
NAME	Virtual Worlds		
FROM	Domark	PRICE	Disc £19.99 Cassette £14.99
95%	96%	98%	JACKPOT
GRAFFIX	SONIX	PLAYABILITY	VERDICT



VIZ

If you happen to be of a sensitive nature, turn the page now!

You have been warned. Viz, the computer game, is certainly not for the prudish or the young and innocent. With the likes of Roger Mellie around to commentate on the main event, you can imagine the kind of language in store for competitors.

Indeed, each of the characters in this blast has an exceptionally unsavoury side to them, illustrated most ably every month in the adult comic. Suffice it to say that we at ACU do have some very young readers around, so we won't be indulging in too much of the obscenities that abound in the game.

That aside, Viz the computer game certainly lives up to the comic in every way. Each of the characters involved acts very true to form, with their own little idiosyncrasies, creating a hilarious product for the very open minded.

Basically, it is a race against time, with you having the choice to take on the role of Biffa Bacon, Johnny Fartpants or Buster Gonad.

Set over five different levels, Country, Town, Building Site, Beach and Disco, you must win every stage to continue, or replay the last stage you took part in to carry on.

Study your character well, for each has his own special powers. As you might have guessed, Biffa's strong points are pint drinking and bunches of fives.

Waggle the joystick through the bonus rounds, then scrutinize the joystick moves to work Biffa up into a winning frenzy to take the stages.

If you choose Johnny, then you'll have to brush up on your guffing power to succeed, whereas we don't have to say too much about Buster's special powers.

If you buy the game, all of the details are painfully described in full, so we won't delve too deeply into Buster's plum performances.

Along the way, expect to meet up with a whole host of other Viz characters, such as the Fat Slags, Mrs Brady and Finbarr Saunders, all of whom are superbly reproduced on your computer screen.

The whole point of the Viz game is the novelty value. Indeed, the recreations of the characters are truly wonderful and, if you are a regular Viz reader, you will no doubt find these performances hilarious.

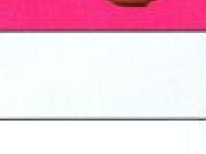
However, once the novelty factor has worn off, there's not an awful lot to do except waggle your joystick and wait for the finishing line.

All in all, top marks for the visual effects, but the gameplay could have been a little more thoughtful.

Jim Johnson





ROUND-UP			
NAME	Viz		
FROM	Virgin Games	PRICE	Disc £14.99 Cassette £9.99
84%	76%	68%	
GRAFFIX	SONIX	PLAYABILITY	VERDICT

The Match

The new season is well and truly upon us, so why not brush up on your own footie skills?



Yep, it's footie management time again and, if there are some of you out there thinking: "Oh no, not again!", whether you like it or not, footie management games, indeed, any sport management games, are very, very popular.

With that in mind, how does The Match compare against the best of the rest? The answer is very well thank you. Donning your sheepskin jacket once more, your task is to go out there into the hue and cry of top team management, hoping against hope to take your players to the top of Division One and keep them there. As usual with a Cult offering, there is a mammoth amount of choice throughout the game, with 40 teams starting off on the grid, 134 players to pick and choose from, four divisions and the sparkling lights of the League Cup to play for.

It is your job to personally select each player before each match, taking into account their fitness, morale and attitude. Get it all right and you'll be in for a monster performance out on the park. If you don't, you could be sorely disappointed in your latest proteges. Using some smart graphics, you can view each match, taking in an ongoing assessment of each of your players performances, sitting back after a good performance to take in your rivals' results on the old teletype.





Use your coaches and spies wisely to poach up and coming players to boost your squad, train them hard and pick the right formation to succeed.

On top of all that, you must also keep your eye on the old bank balance, juggling your gate money against transfer deals to stay on top at all times. After all, there is the Manager of the Year prize to fight for at the end of the season.

With the editor option, as well as the ability to save and load games, The Match is one of those offerings which will have you coming back for more at all times. If you think you've just made a lousy managerial decision, save the game and go off somewhere to ponder your mistake.

A well-earned break should allow you to get that flash of inspiration to put things right again.

One important thing to remember, the crowd does not like boring football. Inject some excitement into your winning team and your attendances will soar, much needed to boost your spending power.

All in all, The Match is yet another excellent strategy game from the Cult stable, with plenty to offer and more than enough options to keep you busy for a fair old time. Go on, treat yourself and get wheeling and dealing now.

Martin Winfield

ROUND-UP			
NAME	The Match		
FROM	Cult	PRICE	Cassette only: £3.99
78%	79%	84%	
GRAFFIX	SONIX	PLAYABILITY	VERDICT





Mercs

Get in and do the dirty job that the regulars couldn't handle.

Central Africa is the location for your next dirty assignment, and this is certainly no safari!

Whilst on a peace-keeping mission, a group of Zutulan revolutionaries has kidnapped the former US President and, for diplomatic reasons, this is no job for the GIs.

Instead, you as former Green Beret Jo Gibson and a friend as Mercs Founder Howard Powell, must take your elite force into the jungle and track down the bad guys before a coup takes place.

It's going to be tough going from the very start, but only you and your comrade can stop the revolutionaries from upsetting the balance of power.

Starting off, you are dropped onto a supposedly unguarded beach head. Wrong! It appears to be very well guarded indeed, so it's straight into trigger pulling mode and get gunning to make your way through to the enemy camp.

Once at the camp, you must destroy the rebel troops to thwart their plans of a military coup. Succeed, and you're off again, this time to the harbour, to stop the rebels arms smuggling racket.



Your next stop in this hard-hitting, frantically fast shoot-em-up, is the swamp. Messy businees, but it's the best route to the President and the rebels' HQ.

At all times, keep your eyes peeled for the crates in your path, as they contain vital energy and special weapons. Shoot them, pick them up and keep on going.

Doing away with the rebel HQ is, unfortunately, only a means to an end, as the rebels have already escaped with the President on the railway.

Taking particular care about their rearguard, you must track them to their final resting place at the airbase. In a final, furious shoot out, you must destroy the heart of the rebel resistance, before hurtling out onto the runway to stop the Hercules transporter plane from taking off.

If it does, you've lost the president and missed out on your money, so pay special attention to it at all times during the crossfire.

Got the message? Mercs is non-stop action from start to finish, running at a furious pace and jam-packed with excitement to keep you well and truly addicted until the bitter end.

Use your megabombs with care and be sure to pick up a few medals along the way as souvenirs in this excellently crafted blast.

Plenty of colourful graphics and superb sound effects make this one a guaranteed winner.

John Taylor

ROUND-UP			
NAME	Mercs		
FROM	US Gold	PRICE	Disc £14.99 Cassette £9.99
88%	82%	86%	
GRAFFIX	SONIX	PLAYABILITY	VERDICT





Quattro Skills

Time to brush up on your sporting prowess and take on the best of the rest.

If you haven't had a go at one of Code Masters' Quattro offerings, you still won't know just how exceptional they are in terms of value for money. The latest in the long line of quadruple blasts, Quattro Skills, is certainly no exception, including four totally different games to knock your socks off

First up on this epic compilation, is the weird and wacky Pro-Skateboard simulator. Oil your Kryptonites and make sure your Gull Wings are functioning properly before taking to the track to beat the field on four wheels.

There are plenty of options to pick from and some truly superb tracks, jumps, loops and bends to bring out the best of your RAD skills Moving from the rough and tumble of skateboarding, you'll need to be just as aggressive to take on the world in the excellent International Rugby offering.



Take your pick from eight teams, including England, Ireland, Scotland, Russia and the Kiwis, and start practising your up and unders if you want to succeed.

For some reason, Wales doesn't seem to be included in the initial line up of international teams, though after their showing in the latest championships, perhaps that is only fair.

Take care to practice your moves, scrum down well and take the offence to your opponents to make sure you end up at the top of the League.

Can you equal England's dramatic success of last year? That's entirely up to you.

Moving on. Code Masters' epic 11-a-side soccer gets another airing, giving you the chance to battle it out for the championship, taking in some crunching tackles and some fearsome opposition.

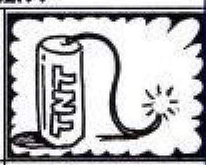
However, if you prefer the gentler art of Tennis, then why not try out the excellent Pro-Tennis simulator, enabling you to take on some of the biggest names on the circuit today, on grass or clay, to bid for some of the most coveted titles in the world.

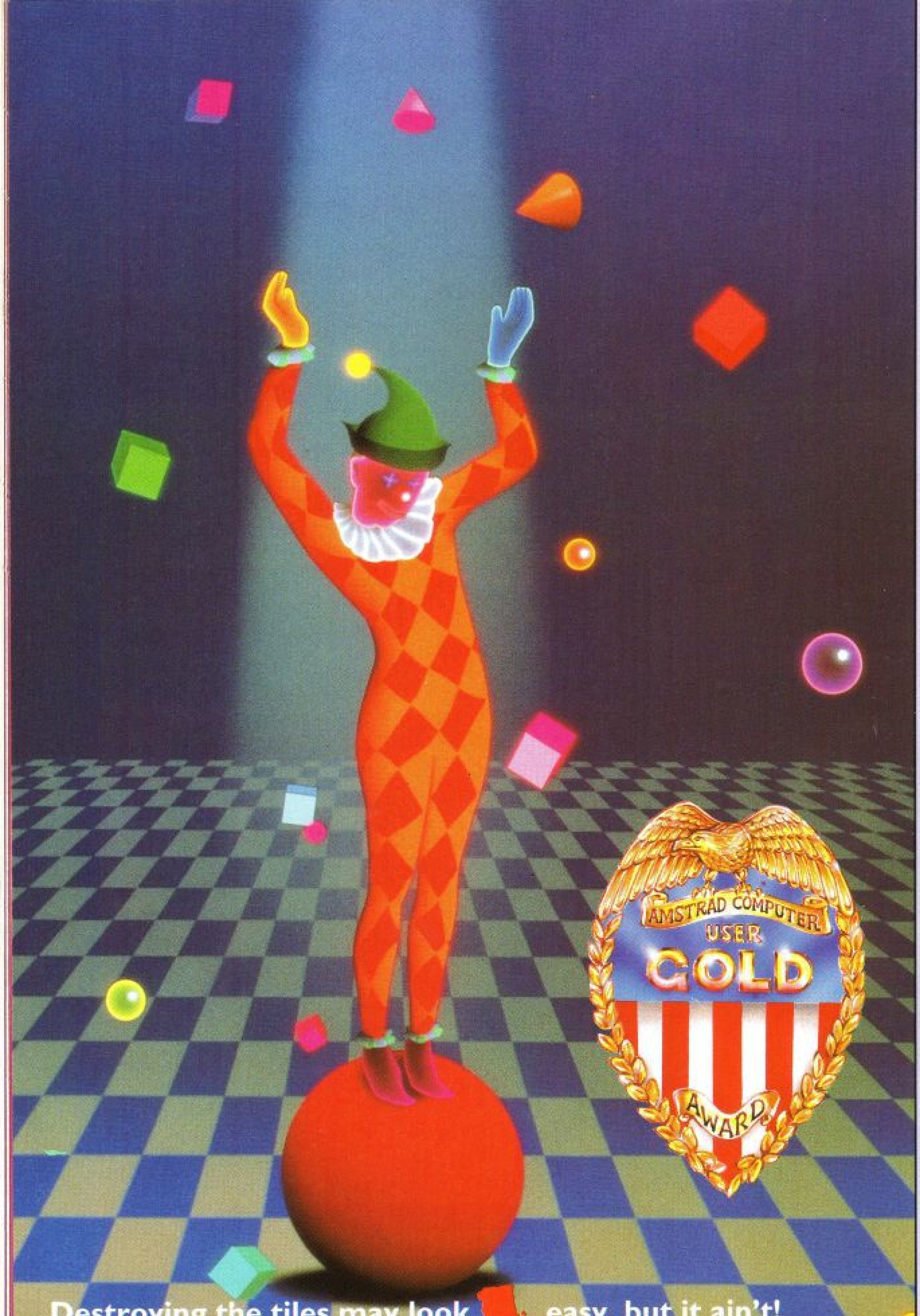
Take care to master your strokes before you get going, otherwise you'll find yourself looking very sorry for yourself at the bottom of the ratings ladder.

So there you have it, yet another brilliant collection of Code Masters classics, offering maximum playing power and featuring the usual Codies' style and graphics.

If you liked the other Quattro offerings, then this is another must to adorn your collection shelf.

Jim Johnson

ROUND-UP			
NAME	Quattro Skills		
FROM	Code Masters	PRICE	Cassette only: £2.99
86%	82%	85%	
GRAFFIX	SONIX	PLAYABILITY	VERDICT



Destroying the tiles may look easy, but it ain't!

SWAP

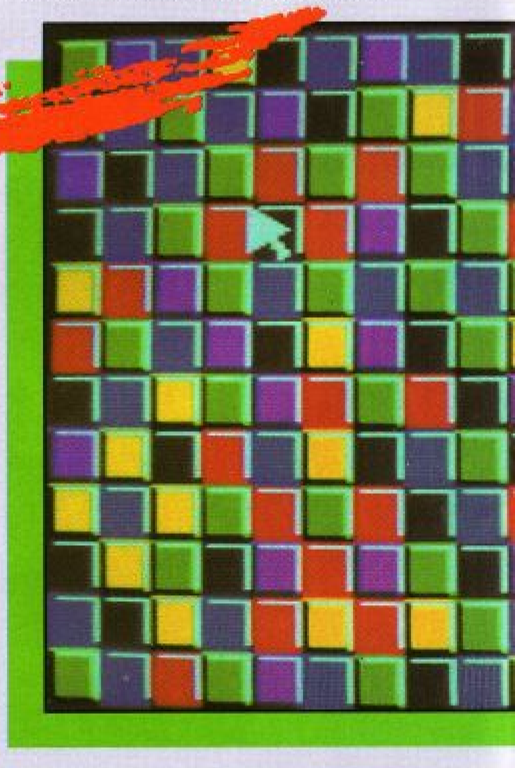
This is one puzzler that you're not going to be able to put own for a long, long time. Brilliantly devised, amazingly simple in its design, yet murder to get to grips with.

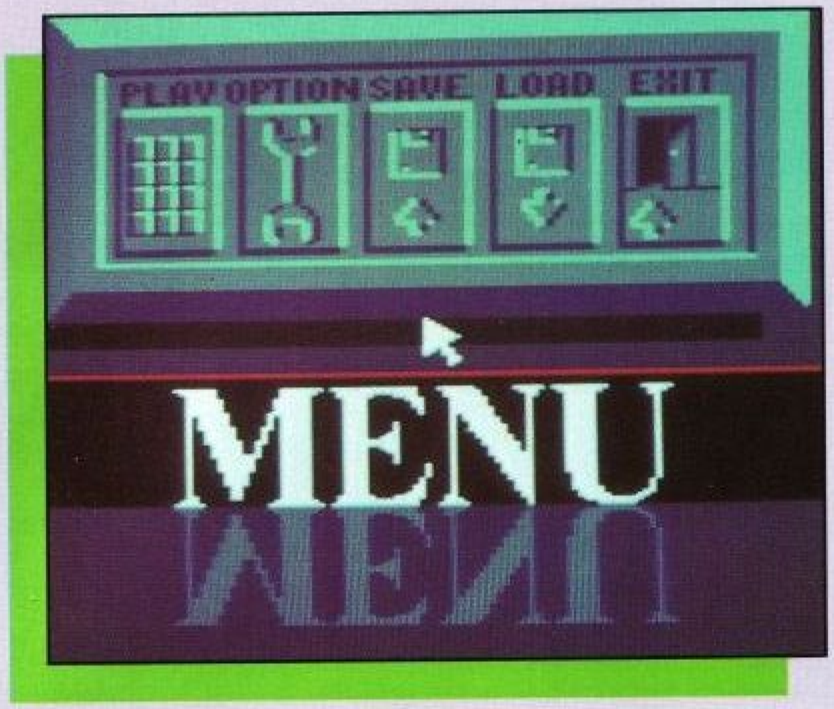
Swap is all about using your cursor to change the position of brightly coloured tiles in the playing arena. Put two tiles of the same colour next to each other and they simply disappear. The aim of the game? To be left with as few tiles as possible on the screen, of course.

Naturally, things are not quite as simple as they seem. Indeed, if you want to proceed to the next level of the game, you don't necessarily have to destroy every tile on the screen, even if you could.

No, the idea is to destroy as many tiles in as few moves as possible, which is where the careful strategy comes in. A quick look at the playing area may make your eyes boggle to start with, but sitting quietly for a moment and studying the configurations of colours may help you to work out your best starting move.

If you can destroy five or six tiles at once, it has to be better than a simple twosome. Indeed, each of your moves is monitored at all times by the intelligent pro-

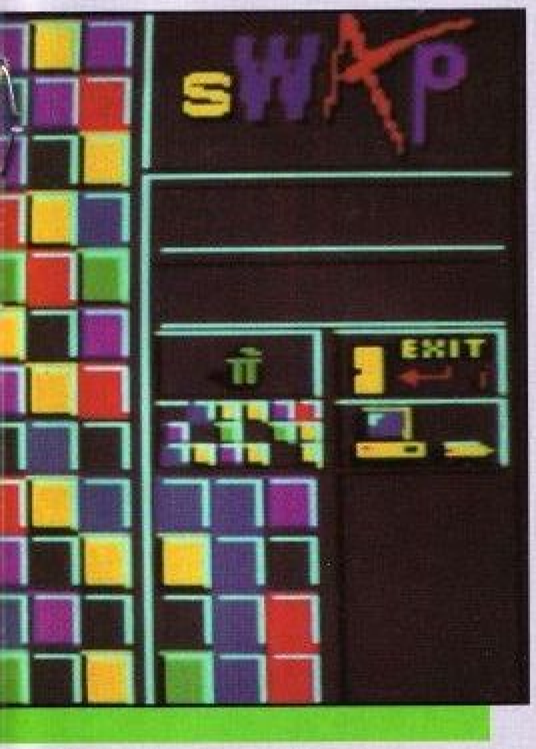




gramming in Swap, gauging your skills and working out whether you are good enough to proceed.

Play well enough and you may find yourself skipping levels to cater for your skills, although that won't happen too often. If you do happen to find yourself unexpectedly on level 90, then you'd better go and have a long drink and pat yourself on the back, you're a genius!

However, for us mere mortals, there are a few very useful options to make things slightly easier. Supplementary tiles are available on many levels, to help you finish off some of the tiles you missed out on the first time around. Be careful though, these are very limited.



Another neat option is the avalanche effect, which causes all tiles to fall to the bottom to fill available spaces. This is particularly useful towards the end of a level where you have left some tiles stranded.

These are the helpful bits. Now come the painful restrictions which will beset you on later levels. The time limit is one of the worst, which will cut down your playing time considerably, leaving you no time at all to decide on your best moves.

Another notable hindrance comes in the form of the Credit system. Reserved for more advanced levels, the credits appear as a stack of ingots at the bottom of the screen. Silver ingots are worth 1 credit, gold is worth 10 credits and, for a diamond ingot, you'll get a whacking 100 credits.

Throughout this game, each move costs 2 credits, while destroying a tile will earn you 1 credit. Thus, a swap that destroyed two tiles will make you a net profit of zero.

Got the idea? Yes, you will need to think very carefully if you want to come out on top in these stages and, if you cannot afford to make a move, the computer will not let you. Be warned!

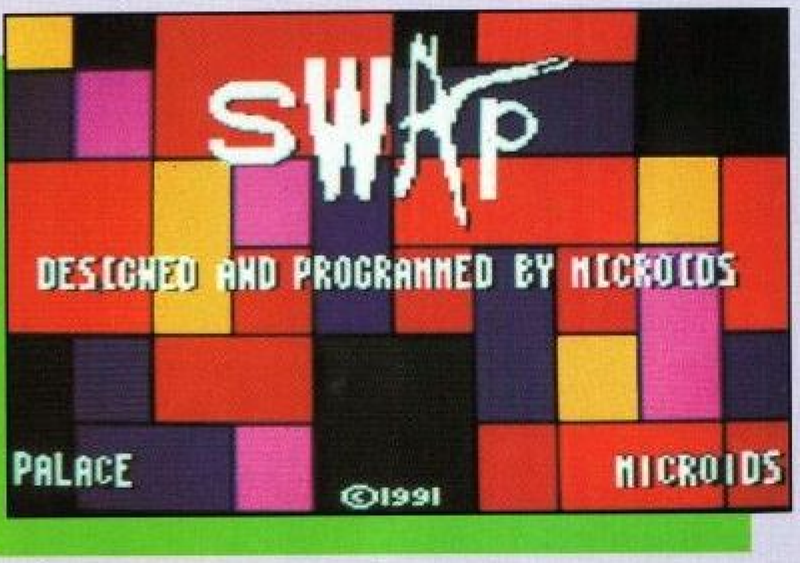
Supplementary tiles will cost you 10 credits, while if you want to take advantage of the avalanche feature in these credit rounds, be prepared to fork out a massive 100 credits.

One other handy hint to remember is the Undo option. This enables you to go back one move in order to erase any howling mistakes you might have made. Extremely useful.

Quite simply, the gameplay of Swap is totally brilliant, but that is only the beginning. Taking a look at the superbly produced menu will show you the host of options available to you.

Clicking on the options icon will take you into the game variations menu, where you can change the shape, size and colour of the playing tiles.

The practice icon is also invaluable, enabling you to select the number of colours you want, the shape and whether or not to include credits, time limits, avalanches and supplementary tiles.



Whether you are a genius or not, playing through the practice level is a must, giving a totally comprehensive run down of everything you can expect to encounter throughout the challenge.

You never know, by constructing your own devilishly hard game of Swap, you may even make the rest of the game a doddle for yourself, though I very much doubt it.

Utilising some exceptionally crisp graphics, Swap is an absolute joy to play. Like so many simple puzzle games, it is totally addictive and is guaranteed to have you gnashing your teeth furiously from the word go.

With the ability to save and load games freely, Swap really is an excellent all-round offering, a must for all serious puzzlers and well worth having a look at, even if you are a hardened shootie fan.

You may well be dumfounded by the gameplay to start with but, after a few attempts, you should get the hang of affairs and find yourself performing well enough to start advancing.

If you don't, then get back to the practice mode and start again from scratch, you'll be doing yourself a favour.

John Taylor

ROUND-UP			
NAME	Swap		
FROM	Palace Software	PRICE	Disc £14.99 Cassette £9.99
89%	86%	96%	TNT
GRAFFIX	SONIX	PLAYABILITY	VERDICT

Budget Basement

Hitting the mark is what it's all about and those canny Mancunians know just how to do that. Take a look through the latest blasts on the Hit Squad label to see for yourself.

APB

It's zany, it's wacky, it's totally brilliant and must be on your buying schedule if you haven't already got the full price version.

As Officer Bob, you've got to get out there on the streets and clear up all traces of villainous vermin to make your daily quota. These may include litter louts, drunks and even hitch-hikers.

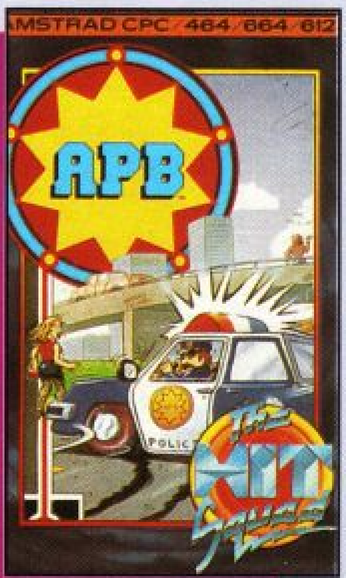
However, at all times listen out for the APB, or All Points Bulletin, which will put you on the trail of the nastier baddies.

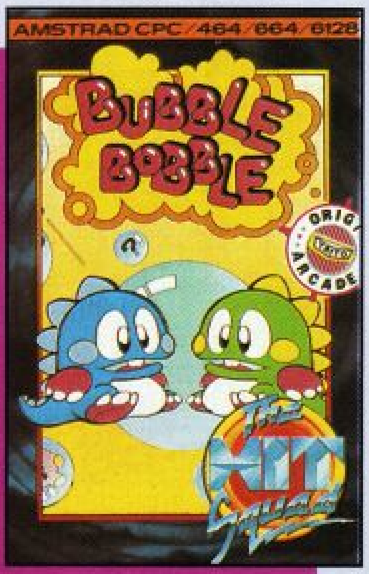
Catch one of these and force him into a confession, and you won't need to worry about the rest of your day's quota. It's not easy wringing a confession out of the bad guys, though, and you'll need to do it before the Chief arrives for it to do you any good, so work 'em hard.

To capture the villains, target your steering wheel cursor on the getaway car and blast your siren. If they won't stop, ram them off the road or shoot them if you've managed to pick up a gun.

Be careful not to shoot bystanders, or you could find yourself with too many demerits and a one-way ticket off the force in this brilliantly funny offering.

Great graphics and smooth scrolling make this a real gem of a budget blast.





BUBBLE BOBBLE

Watch out! Here comes another crazy coin-op conversion that is guaranteed to have you on the edge of your seat at all times. As a one or two player burst, Bubble Bobble sees you and a friend as Bub and Bob, champion bubble blowers, whose task it is to clear 100 incredible stages of big bullies.

To do the dirty on the bullies, simply blow up a bubble, box up the bullies in them, then burst them, sending the bad guys reeling.

Some of the bubbles contain fire, thunder and water, use these to despatch with the enemy even faster and try taking out more than one at a time for big bonusses.

There are also special bonusses to be had for quick clean-ups, and magical, mystery power ups are yours for the taking if you are quick enough.

Beat evil Baron Von Blubba if you can, in this exceptional offering, and try and make it to the 'True Ending'. If you do, there's a big surprise in store.

VINDICATORS

Extremely tough alien bashing action is guaranteed with every purchase of this marvellous tank blast. Taking control of a super charged SR-88 Battle Tank, your mission in the year 2525 is to take out the marauding Tangent invaders, just outside the Galalxy TR15.

Taking on each of the 14 Tangent space stations in turn, there are hosts of alien tanks, turrets and missiles to take out and certainly more action than you can handle if you're not quick enough.

Keep your eyes peeled at all times to replenish your valuable fuel supplies and look out for the power ups to increase your defences and fire power.

Selecting your starting point, you can be guaranteed of blistering blast action wherever you decide to go into the fray and, with the two player mode, the gameplay is totally addictive.

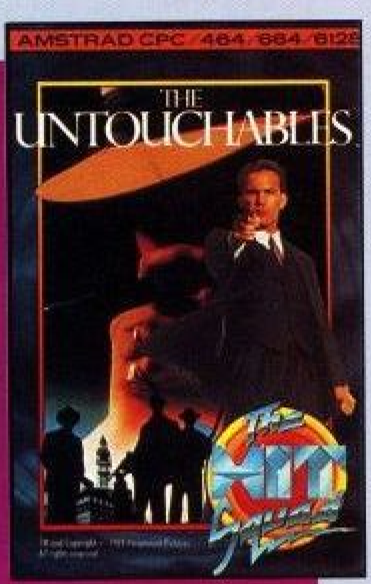
All in all, this is an excellent conversion, featuring some excellent sound effects, that'll glue you to the screen for hours.

THE UNTOUCHABLES

Following the movie plot very, very closely, this is your big chance to take on the role of Elliot Ness to wipe out the infamous Al Capone's evil operations.

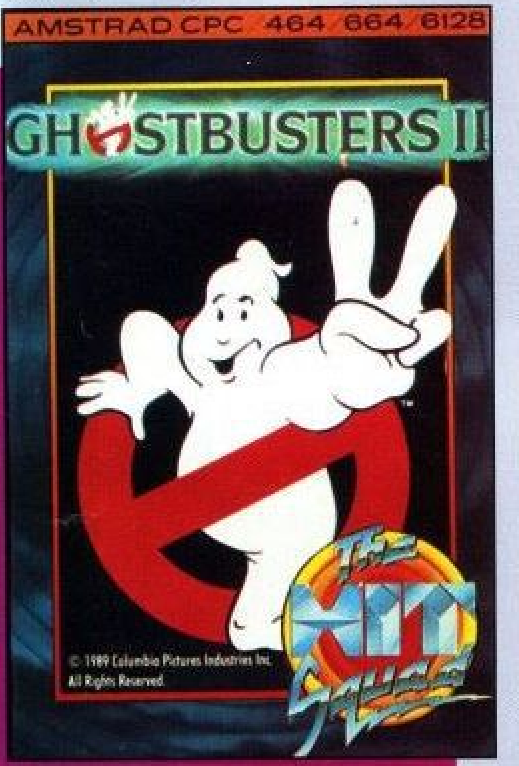
Over six electrifyingly different levels, you must chase out the henchmen at the bootlegging base, at the





American/Canadian border and through the alleyways of Chicago, before attempting to capture Capone's accountant and the valuable evidence at the train station.

Level four is nailbitingly tense as you attempt to guide



the innocent baby in the pram safely down the stairs, while level five has you desperately trying to get a fatal shot at Capone's henchman who is holding the accountant hostage.

If you don't get him within ten seconds, you'll never get your case against Capone to stick in court.

From the very first gunshot, to the final confrontation on the courthouse roof, the Untouchables is red hot action all the way. Brilliantly devised and with some stunning graphics, this is a must for real shootie fans.

GHOSTBUSTERS II

One of the best offerings in this month's little Hit Squad collection, is the awesome Ghostbusters sequel, split into three totally different sections, and each one as hard as the last.

Your first task in this action blast is to collect a sample of slime at the bottom of the airshaft. Guidng your Ghostbuster carefully down the rope, avoid all contact with ghosts, otherwise you'll be frightened to death.

Collecting the three parts of the scoop from the walls of the shaft will enable you to collect the slime, but be very, very careful when the sawing monsters are around. Keep an eye on the close up of your rope and blast away the beasties before they can chew through your rope and send you to your death.

Next up, you must control the progress of the slimy Statue of Liberty to the Museum of Art.

Use your fireballs to obliterate ghosts, but be thrifty, as each new fireball will take strength away from the statue, as will any contact with the ghoulish attackers.

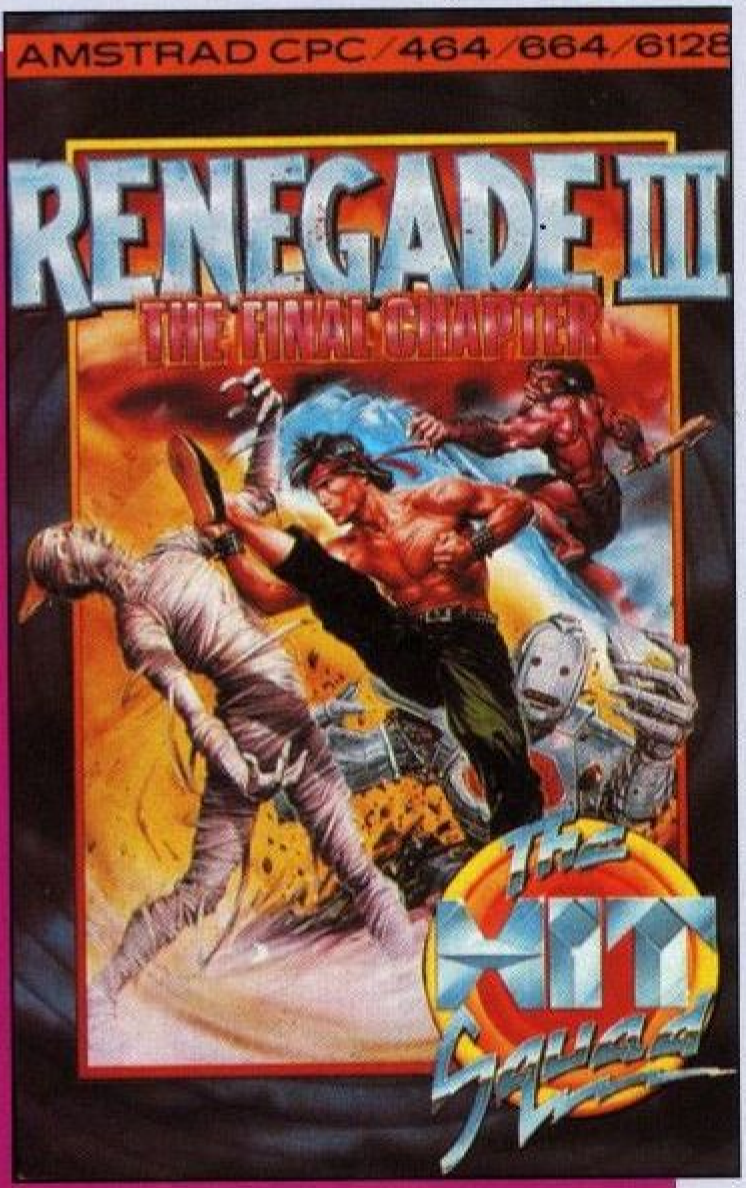
Guide the crowd of bystanders to pick up slime to replenish your supply and you might just make it in time. If not, it's goodbye to baby Oscar.

The final stage sees you abseiling into the museum, on your way to rescuing the baby and taking on the mighty Vigo the Carpathian.

Using the pointer to change weapons, you'll have to be exceptionally quick to beat this mean geezer but remember, if you do, you are going to be some kind of hero.

It's all up to you and the team. Work hard, tread carefully, and go get the bad guys.

Following the film plot very closely, Ghostbusters II is a superb conversion, full of pitfalls and nailbitingly tense.



The nasties are brilliantly portrayed and the graphics make it an absolute joy to play. If you haven't done so already, do it now.

RENEGADE III

If you've played any of the Renegade blasts, you'll know how to defend yourself oriental style, with your Ninja artistry.

However, if you haven't played Renegade III, you won't know what's hit you when you get past the credit screen.

The evil forces from the future have kidnapped your girl again, but this time they've taken her back through time to Prehistoric Ages.

Battling against the clock at all times, your job is to travel backwards and forwards through time, taking on the very hostile natives of the medieval era, Ancient Egypt and battling against dragons, dinosaurs and the living dead, in your quest to rescue your beloved.

Ok, so the plot is a little far-fetched, but the gameplay is totally gripping.

If you don't manage to complete a level within the time limit, you'll get stuck there, so don't hang about. Basically, just hit the ground and come up punching and kicking if you want to succeed.

The soundtrack is superb and, if you're into the old Ninja skills, this one should be right up your street.

Jim Johnson

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THE REAL PROOF

Here it is again, at long last: the ACU Proofreader, to keep all you key tappers happy.

It must be all of three years ago that Aimo Niemi sent us the *Proofreader* program from chilly Finland.

After some minor refinements, the original proggy made its first showing in ACU back in January 1989. Since then, we've been printing it from time to time, to remind you of what an excellent little aid it is to help out with 10-liners and listings.

Those of you who already have it securely saved on their desks, will know what a godsend it is. However, those of you who are seeing it for the first time may need a little instruction on getting the best results out of it. So, here goes.

The ACU Proofreader works differently from any other listing checker you may have encountered, in that it uses clever machine code to display a two-figure proofcode enclosed in square brackets every time it encounters a carriage return at the end of a line in Basic.

What this means is that you can check an ACU listing line by line as you type it in. Alternatively, you can type a listing in, run ACU Proofreader, and list the program to screen or list 8 to printer. A proofcode will appear on the end of every line.

In the listing here, the proofcodes appear at the beginning of each line, to stop sleepy typists from typing them in as part of the program but, in your program, the codes will appear at the end of the line. Also, when using the Proofreader, watch out for the following things.

1. Always run the program from a clean machine. Switch off, then on again, then load and run ACU Proofreader before loading in a partly-typed listing or typing in a fresh one.

2. Save two versions of the program, "PR.SCR" (codes to the screen) and "PR.PTR" (codes to the printer), with line 310 set accordingly.

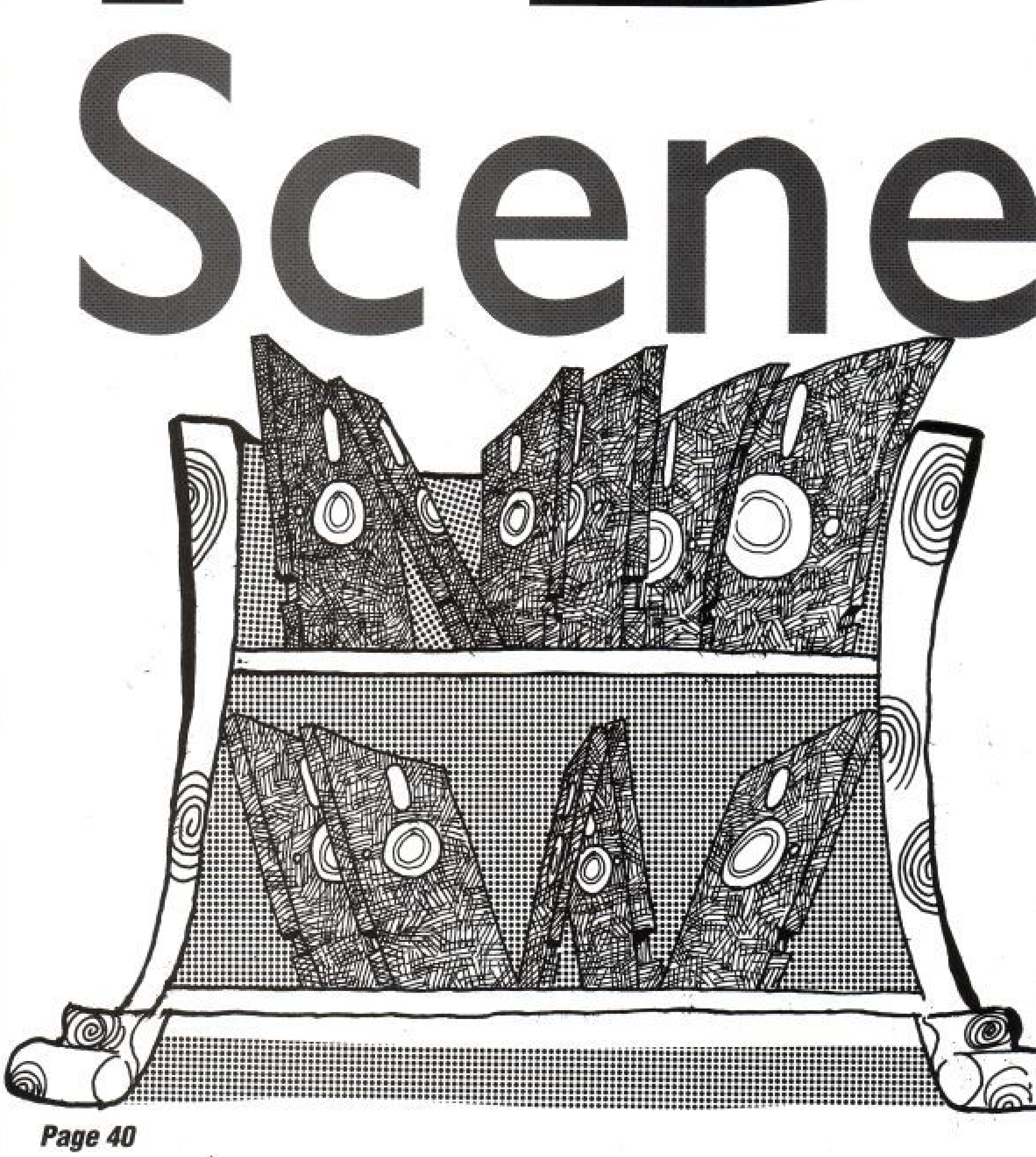
3. When using Proofreader in interactive mode, always use the codes-to-the-screen version. The codes-to-the-printer version should be reserved for hard copies of completed listings.

4. The proofcode is not part of the listing - it cannot and will not be saved by any SAVE command. It is purely visual. That is the bulk of the matter, now you can go away and get typing and keep your eyes peeled for the codes.

```
100 'ACU Proofreader v1.5
110 'By Aimo Niemi
120 'CPC 464, 664, 6128
130 '
140 MEMORY HIMEM-129
150 addr=HIMEM+1:rst=48
160 ad=INT(addr/256):dr=addr-256*
ad
170 FOR bit=0 TO 15
180 READ a$,check:sum=bit
190 FOR k=1 TO 15 STEP 2
200 b=VAL("&"+MID$(a$,k,2))
210 POKE addr,b
220 addr=addr+1
230 sum=(sum+k*b)MOD &FF
240 NEXT
250 PRINT "Line";460+10*bit;
260 IF sum<>check THEN PRINT"Chec
ksum error.":STOP ELSE PRINT"Ok."
270 NEXT
280 '
290 pr=&BD28 'printer address
300 sc=&BB5A 'screen address
310 REM sc=pr Add this line when
using LIST 8.Observe, however,
that the proofcodes may be lost i
f the printer buffer happens to b
e full.
320 '
330 FOR i=0 TO 2
340 POKE rst+i,PEEK(sc+i)
350 NEXT
360 POKE sc,&C3
370 POKE sc+1,dr
380 POKE sc+2,ad
390 IF PEEK(6)=&80 THEN POKE HIME
M+10,&A4
400 '
410 POKE HIMEM+7,&20
420 PRINT "Proofcodes to ";
430 IF sc=pr THEN PRINT "Printer
";ELSE PRINT "screen ";
440 PRINT "are on.":END
450 '
460 DATA e5f5c5d5fe0d203a,15
470 DATA 218aac5faf47577e,210
480 DATA fe30382efe3a302a,80
490 DATA 7ef600202ebb2028,243
500 DATA 3e20f73e5bf77a07,173
510 DATA 070707e60ff630fe,28
520 DATA 3a3802c607f77a1c,39
530 DATA cb4320ef3e5df73e,61
540 DATA 12f7d1c1f1e1f7c9,8
550 DATA 2b3e27bb2004fe20,246
560 DATA 282804fe27f52007,180
570 DATA 3e20bb200daf5ff6,135
580 DATA 20f5afbb2003f1af,117
590 DATA f5f15f0e007a8357,39
600 DATA 0c79b820f8f12002,232
610 DATA 1e0023189b000000,253
620 '
630 ' poke himem+7,&20 = on
640 ' poke himem+7,&18 = off
```

Uncle Bob takes a look at some late arrivals and realises they were well worth the wait, including some excellent hints and tips for would be adventurers and some wizard demos from Robot.

PD Scene



It was bound to happen of course. No sooner had I posted my last article to ACU Towers, which included a moan about the lack of response from certain PD libraries, when what should arrive in the post? Yes, you guessed right, it was a letter full of apology for the lateness of its arrival. David Carter of Penguin Software had some genuine reasons for being late and I am therefore delighted to add his library to my list of good guys (not forgetting Debby Howard) to deal with. As for the others? Not a word has been heard.

Talking of Debby, Adventure PD is becoming firmly established as a complete adventuring service. As the name suggests, she and her library deal only in public domain adventures. What I found surprising was, just how many of them there are. No doubt that old know-all, The Dungeon Master, could finish them all before breakfast, but for normal people like you and I, there must be quite a few problems and puzzles amongst the 57 adventures (sounds like a baked beans advert) that are listed in her adventure catalogue, to keep us busy for months.

This catalogue is available as either a printed sheet or you can get it for free on your own disc. The disc version also includes several extra goodies. You not only get a nice menu driven program that guides you around the stock list, but there is also an adventure map creator program, a playable adventure, a selection of loading screens, a chatty news and reviews section, a competition and last but not least, a complete listing compiled by Mark Eltringham of every commercial and PD adventure ever released on the CPC. Remember, all this is free! All you have to do is send Adventure PD a blank disc plus postage and it will be returned to you with the proggies intact. Prices for the adventures are £1 per side of your own supplied disc or tape. Yes, tape users are not forgotten but one or two selections are only available on disc. As a further aid to lost adventurers, Debby is now providing a solution service as well but this is run as a commercial project and is not Public Domain, ie free.

Incidentally, I mentioned the chatty news section just now. The copy I received included the following snippet:-

'A new columnist has been found for the Amstrad Computer User, going by the name of Dungeon Master – might be worth a look'.

When I showed this to the old Master himself, his face went purple, thunder clouds appeared above his head and he was last seen heading towards his hell-hound kennels roaring *'Might* be worth a look! Where is this wood called Abbey?' I should stay indoors for a bit Debby. About five years should be enough! In the meantime, how about sending me some adventures for reviewing in these pages?

Unlike the above library, the collection of software available from Robot PD is of a far more general nature. Run by Richard Fairhurst from the abandoned county of Rutland, Robot's catalogue includes a cross-section of just about every type of software that it is possible to run on a CPC, plus a few programs that made me doubt my own eyes! Richard kindly sent me a review disc crammed with various PD programs – both games and serious, a printed listing of all the discs available and a very informative letter about the aims of Robot PD. At the time of writing this, there are about 50 discs available. This equates to 100 collections as each collection takes up one side of a disc.

There are many different programs in the range and a lot of them have been developed by Richard himself. He has also imported many from Europe, mainly from France and Germany but also from Denmark and Holland and very impressive they are too. I don't know why it should be so, but our European cousins seem to be better able to make the CPC perform graphical miracles than weare ourselves. We've seen it already in the commercial games sector and now here is our chance to admire their work in the PD scene.

A fine example of smooth scrolling, instantly updated screen and rock steady graphics is a game entitled Croco Magneto. Now I have to be honest and admit that I am not one of the world's greatest games players and hardly know which end of a joystick is the correct one to waggle. I am more at home with a database or spread-sheet and enjoy hours of endless fun mucking about with *deeply serious* software such as a word processor. Despite this apparent defect in my character, I can still recognise that a game has been put together by somebody with obvious programming skill, and that is exactly what had gone into this game. As Richard says on the loading screen *'Equal in quality to many £2.99 games – yet it is PD'* and I for one am not going to disagree. Croco is based around guiding a ball through a maze and destroying bricks whilst avoiding lots of killer drums but it is a much better game than those few bland words can describe. As an extra bonus, the game also comes complete with its own designer program so as you can design your own 24-level game. Brilliant.

The next file that I loaded was the one that made me doubt my own eyes that it was a CPC that I was watching and not in fact a 16-bit machine. The proggie that was responsible for this was a little demo called *Merlin 3.* Now I'm not talking about a demo such as are available sometimes from software houses; things such as the first level of their latest shoot 'em up given away free to tempt you to purchase the full game. No, the type of demo I'm talking about here is a piece of code that usually contains a scroll routine, various animations, a multitude of colours and, last but not least, some music. These are very common on the 16-bit Public Domain scene and are usually provided by very talented *amateur* programmers, who are so pleased with the results they've achieved that they release it as PD for all to enjoy. Now I'm very pleased to report that the same thing is happening on the 8-bit CPC. Just take a look at this program and try to work out how it has been done. When you do, please let me know. I didn't think it was possible to have so many colours on a CPC screen. Amazing.

To order disc software from Robot PD, the system works as follows: You send 45p, a stamped address 'Jiffy' (to avoid the Posties mangling your disc) and a 3inch disc. You will then receive a collection of software on one side and a complete disc catalogue on the other. Once you have the catalogue, you will then be able to order two collections of your own choice per disc. The programs are well worth having and at only 45p per disc they are an absolute bargain.

As usual, I'll finish off with a list of the libraries who have contacted me and sent in examples of their programs. If you are a Public Domain library or wish to recommend one, or even a particular program, then I'll be delighted to hear from you. You can contact me care of ACU at the address on page 5.

Adventure PD
10 Overton Road
Abbey Wood
London SE2 9SD

Data PD Library
202 Park Street Lane
Park Street
St Albans
Herts AL2 2AQ

DW Software
62 Lascelles Avenue
Withernsea
North Humberside HU19 2EB

Penguin Software
Ruxley House
28 Mount Hermon Road
Woking
Surrey GU22 7UH

Robot PD Library
2 Trent Road
Oakham
Rutland LE15 6HF

TAPE AND DISC

AMS 1 – Can I Cheat Death? (adults only), Doomlords I–III, Roog, Spacy and Welladay. 7 Adventures By Simon Avery.

AMS 2 – Adult 2, Boredom (both adult only), Dungeon, Firestone, Jason and the Argonauts and Tizpan Lord Of The Jungle. 6 Adventures By Simon Avery.

AMS 4 – The Lost Phirious Trilogy by Vidipix. 3 Adventures by Neil Scrivenger.

AMS 5 – Bestriary, Besthint program (+2 other programs), Kidnapped, Labyrinth, The Secrets Of Ur and Underground. 5 Adventures plus 3 programs.

AMS 7 – Cacodemon, Dick-Ed, Foxy, Nite Time, and Storm Mountain. 5 Adventures By Mixed Authors.

AMS 9 – House Out Of Town, Total Eclipse Trainer, Rouge Midget and The Search For Largo Grann. 3 Adventures and 1 playable Demo.

AMS 10 – 12 Lost Souls, Labyrinth Hal, Tulgey Woods, Lost Shadow and Escape from Alien Spaceship. 5 Adventures By Mixed Authors.

Just a sample of Adventure PD's wares



The Spritemaker

Budding game creators rejoice! Michael Gledhill's got just the thing to spruce up your playing power.

As an ex-BASIC programmer, I envied machine coders on one main asset: sprites. Try as I might, I just couldn't match the speed of my sprites with theirs, BASIC routines just weren't fast enough!

On learning machine code, I started work on a new sprite making system. Welcome to the Spritemaker.

The clearest way to demonstrate it's power is with an example. The listing below will compile, then display a sprite of a face in PENs 1 and 2 on a PEN 0 background, in mode 1. See if you can work out what the face will look like by looking at the DATA.

```
10 DATA 00111111100
20 DATA 01111111110
30 DATA 11221112211
40 DATA 11221112211
50 DATA 11111111111
60 DATA 11221112211
70 DATA 11122222111
80 DATA 01111111110
90 DATA 00111111100
100  MODE 1
110 ¦CLEAR
120 ¦COMPLETE,10,90
130 LOCATE 13,10
140 ¦SPRITE,1
```

No addresses are needed, and absolutely no machine coding knowledge. You don't even need to say how big the sprite is!

Let's take a closer look at that program.

First, there's the sprite data, lines 10 to 90. You'll notice that the DATA in lines 10,20,80 and 90 have zeros at the start and end of them. This is important.

All of the DATA lines for a particular sprite must be the same length. Of course, if you wanted to compile another sprite with a different width, it's fine, as long as all of that sprite's data lines are also the SAME length. A sprite can be any width or height up to 255 pixels (which wouldn't fit on a BASIC line anyway).

Line 110 has one purpose, to retrieve as much memory as possible. When you run a program, any sprites previously compiled will still linger in memory, so ¦CLEAR should be used to get rid of them.

Line 120 compiles the sprite.

You cannot display a sprite until it's BASIC data has been converted into machine code data. As you can see, the COMPILE command is very simple to use – you just tell the command the first and last line of BASIC DATA which you've used to represent the sprite data.

Once the sprite data has been compiled, the sprite is given a number. Now, we have just ¦CLEARed any lingering sprites from memory, so this is the first sprite, sprite number 1.

Finally, line 140 displays the sprite. The "1" tells the ¦SPRITE command to display sprite number 1, and this is displayed at the cursor position, hence the LOCATE command in line 130.

Incidentally, once you have ¦COMPILEd a sprite, it can be displayed using ¦SPRITE as many times as you like without needing to recompile it (unless, of course, you use the ¦CLEAR command).

I've always believed that the best

```
10 ' Spritemaker 2.3
11 ' ---------------
12 ' Michael Gledhill
13 ' 21 Newtake Road
14 ' Tavistock
15 ' Devon PL19 9BX
16 ' ---------------
20 DEFINT a-z
30 ad=&9000
40 MEMORY &7FFF
50 mistake=0
60 FOR lin=400 TO 1720 STEP 10
70  chk=0
80  FOR n=0 TO 9
90   READ b$
100   IF LEFT$(b$,1)="r" THEN 140
110   a=VAL("&"+b$)
120   chk=chk+a
130   GOTO 190
140   d=VAL("&"+RIGHT$(b$,1))
150   IF d=10 THEN a=&8E:GOTO 180
160   IF d=11 THEN a=&8F:GOTO 180
170   a=&8F+d
180   chk=chk+d
190   POKE ad,a
200   ad=ad+1
210  NEXT n
220  READ b$
230  b=VAL("&"+b$)
240  IF b=chk THEN 270
250  mistake=1
260  PRINT"Error in line "lin
270 NEXT lin
280 IF mistake=1 THEN END
290 SAVE"SPMAKER.BAS"
300 SAVE"SM.BIN",b,&9000,&532
310 CALL &9000
320 |CLEAR
330 END
340 DATA af,32,9c,r1,21,ff,rA,22,be,r2,38a
350 DATA 21,59,r1,01,5d,r1,cd,d1,bc,21,355
360 DATA 30,r1,7e,b7,c8,06,20,3d,cd,5a,3b8
370 DATA bb,4f,3e,08,cd,5a,bb,79,10,f3,4ae
380 DATA 3e,09,cd,5a,bb,23,18,e6,74,88,446
390 DATA 85,40,73,70,72,69,74,65,6d,61,42a
400 DATA 6b,65,72,40,82,99,40,6d,89,83,456
410 DATA 88,81,85,8C,40,67,8C,85,84,88,4de
420 DATA 89,8C,8C,40,47,59,50,00,00,00,2d1
430 DATA 00,00,00,74,r1,c3,a5,r3,c3,27,2ca
440 DATA r4,c3,02,r5,c3,da,r4,c3,72,r4,3a8
450 DATA c3,36,r5,c3,67,r5,43,4f,4d,50,35c
460 DATA 49,4c,c5,53,50,52,49,54,c5,4a,3fb
470 DATA 41,cd,43,4c,45,41,d2,53,50,52,3ea
480 DATA 49,54,45,d0,53,54,4f,52,c5,49,408
490 DATA 4d,50,4f,52,d4,00,00,00,00,00,212
500 DATA 00,80,08,88,20,a0,28,a8,02,82,324
510 DATA 0a,8a,22,a2,2a,aa,00,40,04,44,2b4
520 DATA 10,50,14,54,01,41,05,45,11,51,1b6
530 DATA 15,55,00,80,08,88,00,40,04,44,202
540 DATA 00,20,02,22,00,10,01,11,00,80,0e6
550 DATA 00,40,00,20,00,10,00,08,00,04,07c
560 DATA 00,02,00,01,fd,21,70,01,fd,6e,2fd
570 DATA 02,fd,66,03,7c,b5,c8,ed,52,3e,4de
580 DATA 01,c8,fd,4e,00,fd,46,01,fd,09,45e
590 DATA 18,e8,21,0d,r2,4f,06,09,7e,23,22f
600 DATA cd,5a,bb,10,f9,79,c3,5a,bb,45,581
610 DATA 72,72,6f,72,20,6e,6f,2e,21,29,33a
620 DATA r6,22,c9,r2,fe,02,38,15,28,17,27f
630 DATA fe,04,30,0f,dd,6e,00,dd,66,01,3d0
640 DATA 22,c9,r2,dd,23,dd,23,18,04,3e,347
650 DATA 30,18,c3,21,9d,r1,af,77,2c,77,393
660 DATA 2c,77,dd,5e,02,dd,56,03,cd,e0,4c3
670 DATA r1,b7,3e,31,28,ac,fd,22,32,r3,34f
680 DATA fd,5e,00,16,00,dd,6e,00,dd,66,3ff
690 DATA 01,22,84,r2,21,9d,r1,34,fd,7e,317
700 DATA 04,fe,8c,3e,34,20,8d,fd,6e,00,418
710 DATA 26,00,b5,3e,32,28,83,22,91,r2,2ab
720 DATA ed,52,3e,33,c2,fc,r1,01,00,00,370
730 DATA fd,6e,02,fd,66,03,ed,42,30,07,439
740 DATA 01,00,00,fd,09,18,cb,cd,06,r6,2c3
750 DATA 32,04,r3,32,20,r3,3c,47,7b,d6,262
760 DATA 07,32,3b,r3,cb,3f,ce,00,10,fa,359
770 DATA 32,e6,r2,5f,3a,9d,r1,32,e9,r2,36e
780 DATA 47,19,10,fd,eb,21,ff,rA,ed,52,4c1
790 DATA 2b,2b,2b,22,de,r2,22,00,00,23,1c8
800 DATA 44,4d,23,23,7e,b7,3e,35,c2,fc,43d
810 DATA r1,23,1b,7a,b3,20,f3,21,00,00,2a0
820 DATA 22,be,r2,60,69,36,00,23,36,00,23a
830 DATA 23,36,12,23,e5,2b,2b,2b,eb,21,300
840 DATA 9c,r1,7e,34,87,4f,06,00,21,00,24c
850 DATA r0,09,73,23,72,3e,00,87,87,5f,2bc
860 DATA 16,00,21,99,r3,19,7e,32,46,r3,1e5
870 DATA 23,7e,32,65,r3,23,7e,32,51,r3,262
880 DATA 21,a0,r1,3e,00,b7,28,07,3c,87,2a9
890 DATA 87,87,87,5f,19,22,4a,r3,dd,e1,43a
900 DATA fd,21,00,00,3a,9d,r1,4f,fd,e5,427
910 DATA 06,00,fd,7e,06,fe,40,38,02,d6,3d5
920 DATA 07,e6,00,c5,4f,21,00,00,3a,9e,2fa
930 DATA r1,47,11,00,00,04,05,28,03,19,0a6
940 DATA 18,fa,59,19,11,9f,r1,1a,b6,12,317
950 DATA 1b,1a,fe,00,20,0d,13,1a,dd,77,2e1
960 DATA 00,dd,23,af,12,1b,12,18,02,3c,244
970 DATA 12,fd,23,c1,10,c0,1a,b7,28,0b,3c7
980 DATA 13,1a,dd,77,00,dd,23,af,12,1b,35d
990 DATA 12,fd,e1,0d,c8,fd,5e,00,fd,56,573
1000 DATA 01,fd,19,18,9f,0f,01,10,0d,03,1fe
1010 DATA 03,04,0a,01,07,02,07,47,3a,9c,13f
1020 DATA r1,fe,80,78,da,16,r2,3e,36,c3,420
1030 DATA fc,r1,3d,28,06,3e,30,e1,c3,fc,476
1040 DATA r1,cd,67,r4,21,00,rB,dd,7e,00,2c0
1050 DATA 3d,87,6f,5e,23,56,eb,22,0b,r4,326
1060 DATA 23,23,7e,fe,12,3e,37,20,e0,00,349
1070 DATA cd,0f,r6,e5,3e,1a,95,87,87,87,449
1080 DATA 00,32,14,r4,cd,11,bc,87,11,1f,29b
1090 DATA r4,83,5f,1a,94,13,4f,1a,b7,28,2ef
1100 DATA 07,cb,21,3d,28,02,cb,21,79,32,2f1
1110 DATA 26,r4,e1,25,2d,cd,1a,bc,11,00,311
1120 DATA 00,1a,32,98,r4,13,1a,fe,00,38,24b
1130 DATA 03,3a,14,r4,32,91,r4,13,c9,15,20d
1140 DATA 02,29,01,51,00,00,00,cd,b4,r3,201
1150 DATA c3,fb,r5,4d,r4,14,00,39,r4,14,279
1160 DATA 00,61,r4,04,00,e5,2e,88,7d,2f,2b0
1170 DATA 67,79,a5,28,03,78,a4,47,cb,3d,41b
1180 DATA 30,f2,e1,78,b1,79,e6,aa,28,04,561
1190 DATA 78,e6,55,47,79,e6,55,28,04,78,452
1200 DATA e6,aa,47,78,b1,79,2f,a0,b1,00,4f9
1210 DATA 00,21,9e,r4,06,14,af,77,2c,10,23f
1220 DATA fc,c9,cd,b4,r3,e5,d5,cd,11,bc,69d
1230 DATA 87,87,21,2d,r4,85,6f,5e,2c,56,334
1240 DATA 2c,4e,06,00,eb,11,9e,r4,ed,b0,3bb
1250 DATA d1,e1,0e,00,e5,3a,26,r4,f5,06,404
1260 DATA 00,13,c5,46,1a,4f,00,00,00,00,187
1270 DATA 00,00,00,00,00,00,00,00,00,00,000
1280 DATA 00,00,00,00,00,00,00,77,c1,23,15b
1290 DATA f1,3d,28,0c,f5,10,dc,f1,e1,cd,5e2
1300 DATA cc,r4,0d,20,cd,c9,13,10,fd,1b,3ce
1310 DATA 18,f2,7c,c6,08,67,d0,7d,c6,50,51e
1320 DATA 6f,7c,ce,c0,67,c9,dd,21,70,01,518
1330 DATA 16,00,dd,7e,00,5f,dd,19,b7,20,39d
1340 DATA f7,dd,e5,d1,21,ff,rA,22,be,r2,596
1350 DATA ed,52,44,4d,62,6b,13,36,00,ed,3d3
1360 DATA b0,af,32,9c,r1,c9,3d,3e,30,c2,464
1370 DATA fc,r1,dd,7e,00,fe,04,30,0e,21,3b9
1380 DATA 19,r5,85,6f,7e,32,b2,r4,c9,00,341
1390 DATA ae,a6,b6,d6,04,fe,02,d0,21,32,507
1400 DATA r5,87,85,6f,7e,32,9b,r4,23,7e,370
1410 DATA 32,9d,r4,c9,46,4f,4e,47,cd,b4,447
1420 DATA r3,e5,21,b2,r4,7e,fd,6f,36,00,3df
1430 DATA 21,7e,12,22,9e,r4,e1,cd,90,r4,3b7
1440 DATA fd,7d,32,b2,r4,c9,7c,d6,08,67,4ec
1450 DATA fe,c0,d0,7d,c6,b0,6f,7c,ce,3f,679
1460 DATA 67,c9,3e,38,c3,fc,r1,21,cf,ff,555
1470 DATA 0e,50,e5,06,c8,7e,b7,20,0c,cd,43f
1480 DATA 52,r5,10,f7,e1,2b,0d,20,ef,18,39e
1490 DATA e3,e1,fd,61,21,80,ff,0e,c8,e5,67d
1500 DATA 06,50,7e,b7,20,0c,23,10,f9,e1,3c4
1510 DATA cd,52,r5,0d,20,ef,18,b7,e1,fd,4ed
1520 DATA 69,41,fd,5c,16,00,21,00,00,19,253
```

```
1530 DATA 10,fd,23,23,23,eb,2a,be,r2,ed,438
1540 DATA 52,22,c2,r5,7e,b7,3e,35,c2,fc,4a1
1550 DATA r1,23,1b,7a,b3,20,f3,21,00,00,2a0
1560 DATA 22,be,r2,fd,7c,32,dc,r5,00,fd,46b
1570 DATA 4d,77,23,71,23,36,12,23,11,00,1f7
1580 DATA c0,eb,e5,06,00,7e,12,23,13,10,36c
1590 DATA fa,e1,cd,cc,r4,0d,20,f0,21,9c,552
1600 DATA r1,7e,34,87,6f,26,rB,ed,5b,c2,3e4
1610 DATA r5,73,23,72,c9,e5,21,18,12,22,328
1620 DATA 9e,r4,e1,c3,90,r4,ca,11,bc,e1,552
1630 DATA 3e,32,c3,fc,r1,cd,78,bb,cd,11,50e
1640 DATA bc,11,1f,r4,87,83,5f,1a,3d,bc,36c
1650 DATA 38,06,3e,19,bd,38,01,c9,e1,e1,416
1660 DATA c9,00,00,00,00,00,00,00,00,00,0c9
1670 DATA 3300330222203300002200000333330
1680 DATA 3300330222203300002200000333333
1690 DATA 3300330220000330000220000330033
1700 DATA 3300330220000330000220000330033
1710 DATA 3333330222200330000220000330033
1720 DATA 3300330220000330000220000330033
1730 DATA 3300330220000330000220000330033
1740 DATA 3300330222203333302222203333333
1750 DATA 3300330222203333302222200333330
1760 |CLEAR:|COMPILE,3000,3080
1770 WHILE INKEY$=""
1780  LOCATE INT(RND*40)+1,INT(RND*25)+1
1790  |SPRITEP,1
1800 WEND
```

way to learn a new topic is to learn by experiment, so go ahead. Change line 100 to compile the sprite in a different MODE. Try filling the screen with the face. Try changing the 10 in line 120 to a 20, or the 90 to 70. Try compiling a sprite in one mode and displaying it in a different mode. Is it displayed normally?

Now, we'll go on to meet some new commands and get the low-down on the ones we've already met. The Spritemaker consists of seven bar commands (RSXs): ¦COMPILE, ¦SPRITE, ¦SPRITEP, ¦JAM, ¦IMPORT, ¦CLEAR, ¦STORE. Let's take a look at each of these separately.

¦COMPILE, first line of data, last line of data

You've already seen the speed and power of this command in the example above. You can have up to 128 compiled sprites in memory at once, although normally you'll run out of memory before you can compile that many!

Note: When your sprites are converted into machine code, the sprite data which is produced is dependent on the MODE you are in when the sprite is compiled. So if you compile a four coloured sprite in MODE 1 and display it in MODE 0, it will look corrupted. You'll need to obey a few rules when using ¦COMPILE:

1. All lines for a sprite MUST be the same length. In the listing above, lines 10,20,80 and 90 are 'padded' with 0s. Remember that spaces at the end of a BASIC DATA line will alter that DATA line's length, even though it will look the same length as the others.
2. All lines between the specified 'first data line' and 'last data line' must consist of just BASIC DATA.

Try adding

35 REM Hello

to the program above, then run it.

3. Although the parameters you put on the end of the ¦COMPILE command (the 10 and 50 in ¦COMPILE,10,50) represent line numbers, BASIC does not and cannot be told this, so if you renumber your program using RENUM, the ¦COMPILE parameters will not be changed.

4. You can use any of the 16 pens available in MODE 0 by using the numbers 0 to 9 for pens 0 to 9 and the uppercase letters A to F for pens 10 to 15.

No sprite data is written into memory until your DATA lines have been checked, and the sprite will only be compiled if there's enough space for it.

¦SPRITE, sprite number

This command will display a compiled sprite on the screen at the cursor position, which as you know, you alter using BASIC's LOCATE command. This is where the sprite number comes in.

Don't worry about 'wrap-around'; for example, displaying a 60 pixel wide sprite at the righthand column of the screen where there's only room to display 8 pixels, as the sprite is automatically cut off at the bottom and righthand edges.

¦SPRITEP, sprite number

This command will do the same as ¦SPRITE, but will not display pixels that are in pen 0. This gets rid of the annoying rectangular border around the sprites, so that, in theory, games like Head over Heels can be written in BASIC.

¦JAM, jam code

This tells the ¦SPRITE command how to display a sprite – on top of or merged with the background (¦SPRITE only).

Jam codes : 0 for JAM, 1 for XOR, 2 for AND, 3 for OR.

There is also an extra feature in that you can ask sprites to be printed BEHIND what's already on the screen (¦SPRITEP only).

Jam codes : 4 for display ON TOP, 5 for display BEHIND

¦CLEAR

This will retrieve as much of the workspace as possible, by erasing all sprites and BASIC variables.

You are strongly advised to put ¦CLEAR at the start of any programs that ¦COMPILEs sprites as existing sprites are not erased when you rerun a program.

¦STORE, sprite number

Once again, an example will clarify the function of this command. Add the following lines to the program above.

```
100 ' Make sure you run this in MODE 1
120 ¦COMPILE,10,90
125 'Sprite number 2 will store the sprite data
130 ¦COMPILE,10,90
135 ' Sprite number 2 will store the background
140 ' which gets overwritten when sprite 1 is displayed
150 WHILE INKEY$=""
160 X=INT(RND*40)+1
170 Y=INT(RND*25)+1
180 LOCATE X,Y
190 ¦STORE,2
200 ¦SPRITE,1
210 FOR a=1 TO 30:NEXT
220 ¦SPRITE,2
230 WEND
```

One popular method of using sprites in games is to allow a sprite to appear to pass over scenery, so that when the sprite is removed, the part of the scenery it was printed on gets redisplayed.

This is done in three simple steps:

– Store what's on the screen at the sprite position intitially
– Print the sprite at the sprite position
– Restore what was at the sprite position initially

This should help to explain why the sprite is compiled twice in this program and what ¦STORE is used for.

The area in memory devoted to sprite number 1 actually stores the sprite data, whilst the memory used to store sprite number 2 stores the area of screen where a sprite is about to appear.

As our sprite is 11 pixels by 9 pixels, this is the number of pixels that the ¦STORE command will copy from the screen into memory. These 99 pixels are stored just like a ¦COMPILEd sprite, so can be redisplayed using the ¦SPRITE command.

¦IMPORT

This command was suggested by David Gibbon of County Durham. He suggested that BASIC programmers could get machine code sprite data from loading in screens saved from art packages.

Who was I to argue ?

To use ¦IMPORT, you need to draw your sprite in the TOP-LEFTHAND corner of the screen, save it normally, return to BASIC, then use a program like the following:

```
10 INPUT"Filename ",a$
20 INPUT"Mode ",b
30 MODE b
40 LOAD "!"+a$,&C000
50 ¦IMPORT
```

The command calculates the size by looking for the bottom righthand corner of the sprite, so if you had just one pixel in the bottom righthand corner of the screen, then the command will assume the WHOLE SCREEN is the sprite (and probably result in an error due to the sprite's enormous size!).

From there, the sprite is read in, and to all extents, it's treated like a ¦COMPILEd sprite.

Make sure that the rest of the screen which you draw the sprite on is set to pen O.

Error numbers

To save your valuable memory, the Spritemaker errors appear as simply "Error no. X". Note that a BASIC program will not stop when the Spritemaker error is printed, so you'll need to press ESCape when you see one!

The error codes are as follows:

Error no.0 – You've left off a variable (¦COMPILE,30)
Error no.1 – "First data line" doesn't exist
Error no.2 – "Last data line" doesn't exist
Error no.3 – One of the data lines too long/short
Error no.4 – A non-DATA line found
Error no.5 – Not enough workspace for sprite
Error no.6 – All 128 sprites in use
Error no.7 – Sprite has been overwritten
Error no.8 – The screen is clear ! (¦IMPORT)

Typing in the Spritemaker program

When you run the program, assuming all DATA lines are correct, the BASIC program and a binary version will be saved. To load back the Spritemaker code and set up the RSXs you need only type:

```
MEMORY &7FFF:LOAD"SM.BIN",&9000:CALL &9000
```

If anyone writes a cracking program with the Spritemaker send it into ACU, remembering to conform to a few rules, to keep the members of the ACU staff sane (or as close as is surgically possible).

– Make sure that your program starts off with the lines below to ensure the Spritemaker is loaded once and only once and that SM.BIN is either on the same disc or following the main pro-

gram file on tape.

```
10 IF PEEK(&9000)=&AF THEN
GOTO 30
20 MEMORY
&7FFF:LOAD"SM.BIN",&9000:CALL
&9000
30 REM Rest of program.
```

– If you're going to send in a sprite-based program, try not to have masses of BASIC DATA for sprites, be considerate to the readers who will have to sit and type them all in.

That's basically all you need to know. BASIC programmers, try to save your programs a little more often, as Amstrad BASIC doesn't really like taking second place to a set of RSXs.

Spritemaker v2.4 may also see the light eventually, so if you have any ideas for extra RSXs, send them in. I am always open for suggestions, death threats, blind dates, or just a plain old chat at the following address:

Michael Gledhill
21 Newtake Road
Whitchurch
Tavistock
Devon PL19 9BX

Enclose a SAE if you're expecting anything resembling a reply.

Memory management

Once sprites are compiled, there is no reason why BASIC doesn't just overwrite the whole lot of them. To prevent this you need to set MEMORY to just below the location of the sprite data lowest in memory.

This can be achieved using the following three lines, which make use of ¦COMPILE's optional third parameter, which returns the address which the sprite is compiled to into an integer variable.

```
a%=0
¦COMPILE, 10, 50, @A%
MEMORY %a – 1
```

This is especially important before loading or saving to tape or disc as this uses a 2K buffer.

A Spritemaking Demo

This example program will demonstrate the power of the jam codes 4 and 5 by making a sprite move in front of, and behind two identical shapes.

BASIC programmers notice that the CALL &BD19, as briefly described in the CPC manual can be used to prevent sprite movement from being jerky.

```
10 MODE 1:BORDER 0:INK 1,26
20 INK 0,0:INK 2,6:INK 3,11
30 ¦CLEAR
40 ¦COMPILE,60,160
50 ¦COMPILE,60,160
60 DATA 000001111100000
70 DATA 001111010111100
80 DATA 011110010011110
90 DATA 111111111111111
100 DATA 113311111113311
110 DATA 111333333333111
120 DATA 111130000003111
130 DATA 011113022031110.
140 DATA 001111322031100
150 DATA 000011133030000
160 DATA 000000011330000
170 FOR n=0 TO 100 STEP 2
180 PLOT 222,250:DRAW
172+n,150,3
190 PLOT 364,250:DRAW
314+n,150
200 NEXT n
210 FOR n=0 TO 20 STEP 2
220 PLOT 212+n,150:DRAWR
0,20,0
230 PLOT 354+n,150:DRAWR 0,20
240 NEXT n
250 LOCATE 11,17:PRINT"IN
FRONT"
260 LOCATE
21,17:PRINT"BEHIND"
270 FOR n=1 TO 40
280 LOCATE n,13
290 IF n<20 THEN ¦JAM,4 ELSE
¦JAM,5
300 ¦STORE,2:¦SPRITEP,1
310 FOR p=0 TO 3:CALL
&BD19:NEXT p
320 ¦SPRITE,2
330 NEXT n
340 IF INKEY$="" THEN 270
350 CLS
```

For the machine coders

The Spritemaker is, quite frankly, the most unrelocatable thing I've ever done, mainly so that as much speed can be squeezed out as possible.

Don't try and relocate it, it won't work!

Obviously one of the main assets in a program like this is to be able to use BASIC to design sprites and the Spritemaker to compile this BASIC data into machine code data which can be used to your own programs.

To incorporate sprite data, you'll need to know where to find a sprite's data, and how many bytes it uses.

The sprites are stored as blocks consecutively downwards from &8EFF, each block directly below the next.

Each block is stored in the following format:

Byte 0 : Width of sprite
Byte 1 : Height of sprite
Byte 2 : &12
Bytes 3 – ???? Sprite data

The &12 is there for the ¦SPRITE and ¦SPRITEP commands, so they can check whether the sprite has been corrupted – if &12 isn't at byte 2 then the sprite is corrupted – display Error no.7.

The program uses a table of addresses (from &8FOO to &8FFF) to store the locations of the blocks, allowing sprites to be referred to as a simple number, rather than an address. So the address of the block storing sprite 1 is stored at &8F00/1, the block for sprite 2 at &8FO2/3 and so on.

From there saving sprites should be a doddle. You know where the sprites are stored, how they're stored, and can work out their size by multiplying the sprite's width by it's height.

The following BASIC program might help you if you're lost. Enter the sprite number and the rest is done for you. Note then &909C stores the number of sprites complied (0-128).

```
10 INPUT "Sprite number";a
20 b=PEEK(&909C)
30 IF a>0 AND a<=b THEN 50
40 PRINT"Sprite doesn't exist.":END
50 tbl=&8FOO+(a–1)*2
60 spaddr=PEEK(tbl)+256*PEEK
(tbl+1)
70 PRINT"Sprite stored at ";
80 PRINT HEX$(spaddr)
90 wid=PEEK(spaddr)   'WID =
Width
100 hgt=PEEK(spaddr+1)
'HGT = Height
110 siz=wid*hgt   'SIZ = Sprite size
120 chk=PEEK(spaddr+2)
130 if chk=&12 THEN 150
140 PRINT"SPRITECORRUPTED.":
END
150 PRINT"SAVE";CHR$(34);"
FILENAME";
160 PRINT CHR$(34);",B,&";
170 PRINT HEX$(spaddr+3)",";siz
```



The Fifth Protocol

A guide to communications Protocols by Nick "traffic" Hutton and the J.I.C.

From consulting with other modem users and sysops it seems that there is a great deal of confusion arising from the use of different modem protocols. A protocol is simply an agreed standard for transmission and receiving of data from one modem to another. Most problems arise from poorly or incorrectly configured programs. If the data being sent is not in the expected format then it is more than likely that the data will be totally scrambled at the other end

If you intend doing any comms programming then I strongly recommend you read this article as it covers the basics of file protocols and data transmission. Also the involved mathematics could be used as the basis for some sort of study, at A-Level or possibly higher.

I have tried to give some examples of application of the techniques involved in protocols. Where specific examples have been mentioned, the data was taken from a number of communications applications, I certainly didn't write them all! If you do have problems then it is a lot easier to see just what the problem is, if you can understand how the protocols work.

For the purpose of this explanation, let us consider a user who is logged on to a bulletin board, and who wishes to upload or download a file. Most host software supports the popular X, Y or I-modem protocols.

I have studied a large number of bulletin board host systems and most of this article is based on a typical model BBS system, for the most part the Searchlight BBS provides an excellent base to study the merchants behind protocols. Although not all of the data can be applied to all bulletin boards, by convention the handling and processing of procotols is very similar no matter what software is used. I would think that the following information would be of greatest use to sysops and programmers looking into comms programming (the CPC is a bit short of terminal emulators and host software at the moment!).

The files are sent to the user and received from the user using the XMODEM, XMODEM/CRC, YMODEM (also known as 'XMODEM-1K') or YMODEM-Batch protocol. Users can receive and send files using one of these transfer protocols when it is provided by their particular communications program. The YMODEM-Batch protocol is preferable, as it is the fastest, easiest to use and most accurate. For more information refer to their descriptions.

The XMODEM/YMODEM routines

The popular BBS provides extensive information on the status of the file transfers. Of every consecutive block, when sent or received in transfers, its blocknumber is often displayed on screen in hex. Any errors (and their causes) during the transfers are also usually displayed on-screen, so at all times the transfer's progress can be monitored by the sysop and user.

Files are buffered (wholly or partially) in RAM, so transfers, listings, etc. are possible at maximum speed. The size of the buffer (which is multipurpose, and is used to load messages, bulletins, etc. etc.) is determined at the start at the main BBS program. It is possible that the host software will allow the Sysop to change the size of this buffer, depending on how much RAM he has to spare. In general, the bigger, the better and faster the BBS can handle some files.

Any length of file can be downloaded or uploaded usually, by using smart buffering. During uploads, a dummy file is created to receive the data, so the maximum file size is only restricted to the unused space left on the BBS system disc.

The XMODEM and XMODEM/CRC protocols

A description of the XMODEM protocol follows below. This will help you to understand the messages reporting any errors that occur during transfers and may help to take appropriate action after determining the cause of some persistent error.

The XMODEM protocol sends files in blocks of 128 bytes. Files that are not exactly a multiple of 128 bytes in length are 'padded' in the last block (by the sender program) with some character. (The exact code is not important and is not dictated by the protocol definition. Most transfer programs (including the BBS programs) use <CR> (code 13)).

The blocks are sent by the sender program to the receiving program in block number (i.e. consecutive) order. Each block has a number from 0-255 (1 byte). The number of the first block sent is &01, after which block number &02 is sent, etc., and every 256th block 'wraps' back to block number &00.

Every block sent is constructed like this:

<SOH> <Block-nr> EOR 255> <128 bytes of data> <Checksum>

The <Checksum> is a 1-byte arithmetic sum of the 128 bytes i.e., all 120 bytes' values are added and the resulting value is ANDed with &FF. The <SOH> character (code 1) signals the start of a block. The block number is followed by the same block number EORed with 255 (1's complement – remember Auntie John's bouncing ball program which used complimentary arithmetic?) to improve (blocknumber-) error detection.

The receiving program re-calculates the checksum, using the 128 data bytes received, checks the block numbers, counts the data bytes (of course there should be 128 of them) and acknowledges a correct block by sending an <ACK> (code 6) character, or, if the checksums do not match or another error has been detected, signals the error with a <NAK> (code 21) character. The sender program then either sends the next block if it received an <ACK> or re-sends the current block in case of a <NAK>.

When all blocks have been sent, the sender sends a <NAK> code every time after 'hearing nothing' for 10 seconds (this is called a 'timeout'). Also, the delay between every character in every 128 byte 'packet' should not be greater than 1 second (i.e. a 1 second 'timeout' for each character).

The transfer is initiated by the receiver with a <NAK> code, after it 'times out' after the first 10 seconds of waiting. This first <NAK> may also be sent earlier, in case the sender is expected to be ready. The sender, waiting for the initial <NAK>, has only one very large timeout, abut 60 seconds usually, before it completely aborts the transfer.

All errors (which are all <NAK>ed by the receiver) should be retried 10 times. After the 10th (unsuccessful) try, the sender will abort the transfer.

An abort is signalled by either side by sending one or more <CAN> characters (code 24) (which do not have to be <ACK>nowledged).

In the MODEM/CRC protocol the 1-byte checksum is replaced with a 2-byte CRC (Cyclic Redundancy Check). Using CRCs give a much improved detection of errors. For example, all single and double bit errors, all errors with an odd number of bits and more than 99% of all possible 'burst' errors are detected. By contrast, checksums fail to detect a lot of double-bit errors and all 9-bit or longer error bursts. For example, a simple double-bit error like the addition of &80+&80 instead of &00+&00 (i.e. two bits in error) both resulting in a (partial) checksum of &00, can pass undetected.

The receiver program signals to the sender that it prefers CRC mode by sending a 'C' character (code 67) instead of (only) the first <NAK>. If the sender program sends its first block within 3 seconds after this, the receiver assumes that the sender supports the XMODEM/CRC protocol and will switch to CRC mode. Otherwise, checksum mode is assumed and used. (Alternatively, the receiver may retry handshaking by re-sending the 'C', but this will, of course, cause increasingly longer delays when it deals with sender programs that do not support XMODEM/CRC).

For the mathematically minded: the CRC used is CRC-16, which is:

x^16 + x^15 + x^2+1

Bits represents the coefficients of a polynomial. The CRC-16 polynomial is a generator polynomial which is used to divide the message polynomial by (the 128 data bytes), resulting in a remainder polynomial, which is the 2-byte CRC. It can be calculated thus (using polynomial recycling):

- CRC = &0000
- For every next byte in the (128) byte data block:
  - EOR high byte CRC with this byte
  - For every one of the eight bits (high bit first):
    - If 0, shift CRC left, shifting in 0
    - If 1, shift CRC left, shifting in 1, after EORing CRC with &0810

This gives the required 2-byte CRC value. This routine is implemented in most BBS's in machine code, for which it is very well suited, which makes calculation of the CRC extremely fast, even on quite slow processors.
By the way, don't worry if you didn't understand most of the above mathematics, as you will only really find it easy if you are doing/have done A-Level mathematics (take my advice it's horrible).

The YMODEM ('XMODEM-1K') and YMODEM-Batch protocols

- YMODEM or XMODEM-1K uses 1024-byte blocks instead of 128-byte blocks. This speeds up transfers considerably when long files are transferred or when the delay between consecutive blocks is high (for example, when the user's communications program is 'slow' or when the telephone line itself introduces delays). When the file length is not an exact multiple of 1024 bytes, the last few blocks will be sent as 128-byte blocks until the whole file has been sent. 1024-byte blocks are distinguished from 128-byte blocks by using an STX (ASCII 2) character instead of the SOH (ASCII 1) character.

- YMODEM or XMODEM-1K transfers use CRC error checking by default.
- YMODEM-Batch, in addition to the above-mentioned differences, also sends the filename and original file length (a null-terminated filename string followed by space- or null-terminated decimal string representing the file length) in a block numbered #0, which is usually 128 bytes long. In this way, the exact file length can be preserved, and the filename only has to be specified once by the user. More information, to be put in this block, is provided for in the protocol, but these fields are optional and are currently not used by some BBSs. Also, with YMODEM-Batch, multiple files may be transferred in one go (though often only downloading multiple files is implemented).

Modem matters

Getting your modem to work with the BBS software is not easy. But if you follow the guidelines below things may seem a little less complex.

Your modem should support the Hayes command set to work with a BBS. Most 'intelligent' modems do. It should also be able to auto-answer and preferably auto-dial, though the latter is not used by most systems.

If your model has a (so-called) '1200/75' speed (which is the only 'split baud rate' (receive and transmit speeds differ) of all speeds normally found on modems), it MAY not work with many BBSs, as different modems usually handle this 'special' speed differently, in spite of them using the Hayes standard.

At the other speeds, 300/300, 1200/1200, 2400/2400, or even higher speeds, the BBS should be able to work with practically all modems that are 'Hayes compatible', i.e. implement the Hayes standard command set. These will, when auto-answering, scan all these speeds, and try to match it with the speed the caller is using. An appropriate 'CONNECT xxxx' message is then sent by the modem, in which xxxx specifies the connection speed.

Note

Getting a modem to work with a BBS is usually NOT a trivial task. Please TEST and try out settings. Consult your modem's manual with great care. Don't give up too soon if your modem does not work correctly first time, and don't hesitate to ask more 'competent' persons for help.

If you do intend to set up a Bulletin board yourself then the setup of your host modem is very important and is the cause of a lot of problems in many cases. The following is just a quick general guide to the way most bulletin boards require the modem to be configured.

MODEM DIP SWITCH SETTINGS

The dip switches on your modem should be set to do the following:

- Read DTR signal (It should NOT ignore it!) ***
- Result codes in words
- display result codes
- Command characters not echoed
- Do NOT auto answer calls (after first ring)
- Carrier detection (pin 20) forced TRUE ***
- Modem recognizes commands

SEIKOSHA DOT MATRIX PRINTERS

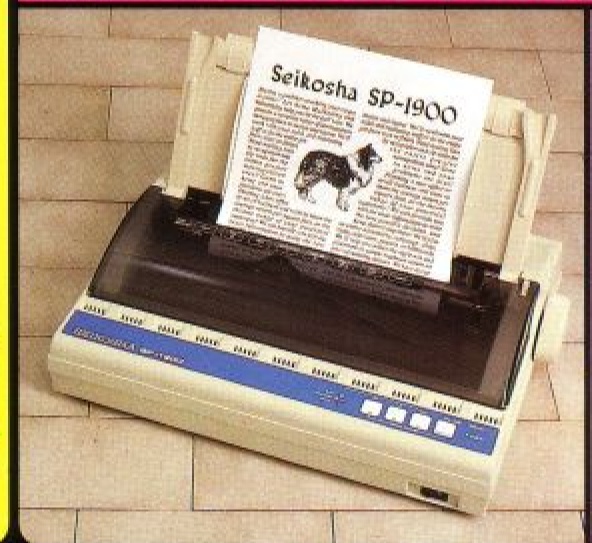
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9-PIN PRINTERS



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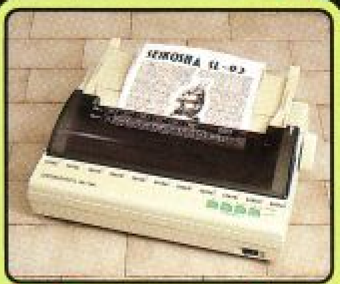
240 CPS DRAFT **136** COL

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- *300cps SD, 240cps Draft, 50cps NLQ*
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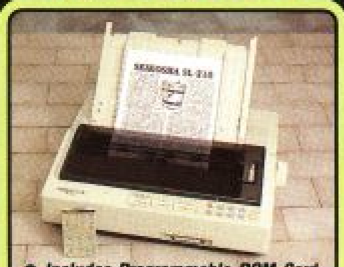


240 CPS DRAFT **80** COL

- *Seikosha SL-92AI - 24 pin - 80 col*
- *240cps Draft, 80cps LQ*
- *44K Printer Buffer + 2 Fonts*
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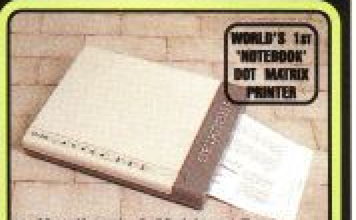
- *Includes Programmable ROM Card*

324 CPS DRAFT **80** COL

- *Seikosha SL-210AI - 24 pin - 80 col*
- *324cps Draft, 108cps LQ*
- *5K Printer Buffer + 9 Fonts*
- *Parallel and Serial Interfaces*
- *Graphics Resolution: 360×360dpi*
- *Epson and IBM Emulation*
- *Optional Auto Sheet Feeder*
- *FREE Silica Printer Starter Kit*

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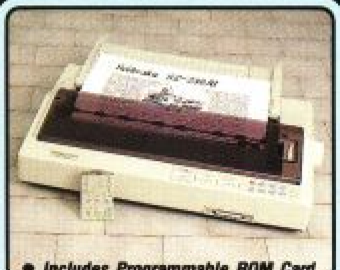
144 CPS DRAFT **80** COL

- *Seikosha LT-20 - 24 pin - 80 col*
- *180cps SD, 144cps Draft, 60cps LQ*
- *1K Printer Buffer + 9 Fonts*
- *Parallel Interface*
- *Graphics Resolution: 360×180dpi*
- *IBM Emulation*
- *Built-in 50 Sheet Auto Feeder*
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RRP: £369 / STARTER KIT £25 / TOTAL RRP: £394 / SAVING: £125 / SILICA PRICE: £269

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277 CPS DRAFT **136** COL

- *Seikosha SL-230AI - 24 pin - 136 col*
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- *5K Printer Buffer + 9 Fonts*
- *Parallel and Serial Interfaces*
- *Graphics Resolution: 360×360dpi*
- *Epson and IBM Emulation*
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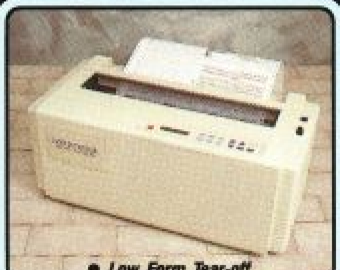


462 CPS DRAFT **136** COL

- *Seikosha BP-5500AI - 8 pin - 136 col*
- *462cps Draft, 106cps NLQ*
- *18K Printer Buffer*
- *Parallel and Serial Interfaces*
- *Graphics Resolution: 240×144dpi*
- *Epson and IBM Emulation*
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520 CPS DRAFT **136** COL

- *Seikosha BP-5780AI - 18 pin - 136 col*
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- *20K Printer Buffer + 2 Fonts*
- *Parallel and Serial Interfaces*
- *Graphics Resolution: 240×240dpi*
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RRP: £1699 / STARTER KIT £25 / TOTAL RRP: £1724 / SAVING: £325 / SILICA PRICE: £1399

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800 CPS DRAFT **136** COL

- *Seikosha SBP-10AI - 18 pin - 136 col*
- *800cps Draft, 200cps NLQ*
- *64K Printer Buffer + 2 Fonts*
- *Parallel and Serial Interfaces*
- *Graphics Resolution: 240×240dpi*
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Getting into

Glynne Davies steps on from BASIC to help you to capitalise on the CPC's graphics power, using his excellent Easydraw 2 programs.

Following on from my introductory Basic series I am now going to look at the excellent graphic capabilities of the Amstrad CPC. The best way to learn graphics is to write a program which extensively uses graphics. *Easydraw2* is such a program, a graphics program rivalling the professional packages with the added advantage that you can add your own routines. The first graphics package I wrote, *Easydraw,* was way back in 1985, the only similarity between the original Easydraw and Easydraw2 is the name, in fact when I look back at Easydraw I realise how naive Easydraw was.

This course on Graphics assumes that you have some idea of the Basic language and teaches graphic methods and program design. The program will build up over the coming months, each month adding new subroutines and merging the routines into a master file. Under no circumstances renumber the master file until the package is complete as the new routines rely on the original line numbers.

Designing a Program

As a programmer, the original idea or concept is probably the most important decision you will make. Can it be computerised? will it be needed when finished? will it be different from the others that are available? are all questions that need to be answered prior to any programming taking place. A section called Considerations will be included within the documentation for each sub-routine, these are my thoughts before writing the routine and hopefully they will make you aware of the amount of programming that is achieved off the machine.

DRAW AND MOVE A CURSOR ON THE SCREEN

In this sub-routine a cross-hair-sight type cursor is moved about the screen using the arrow keys. The whole of Easydraw2 is based upon the position of a cursor, therefore this sub-routine must be written first if we are to test each stage.

Considerations

1. A visible cursor must be placed on the screen. If the cursor is moved the original must be removed and then the cursor can be placed in the new position.
2. The four arrow keys must be checked to see if they have been pressed.
3. There is no need to check to see if the cursor remains on the screen as the user may wish to draw to a position off the screen.

Variables Used

- x : Horizontal position of the cursor
- y : Vertical position of the cursor
- jump : The distance moved by the cursor on each move
- trip : A variable used to control the main loop 70-500

The Listing

```
10 REM EASYDRAW2
20 REM Variables x y (co-ordinates)
jump (cursor move distance)
40 x=320:y=200:jump=10
50 MODE 2:REM 640x200 graphics
60 GOSUB 5070:REM draw cursor
70 WHILE trip=0
80 CALL &BB18:REM wait for a
keypress
90 GOSUB 5000:REM Cursor move
500 WEND
4990 REM
*************************
5000 REM Cursor move
5010 IF INKEY(1)=0 THEN GOSUB
5070:x=x+jump:GOSUB 5070
5020 IF INKEY(8)=0 THEN GOSUB
5070:x=x-jump:GOSUB 5070
5030 IF INKEY(2)=0 THEN GOSUB
5070:y=y-jump:GOSUB 5070
5040 IF INKEY(0)=0 THEN GOSUB
5070:y=y+jump:GOSUB 5070
5060 RETURN
5065 REM
*************************
5070 REM Draw cursor
5100 LOCATE 1,1:PRINT
CHR$(23)+CHR$(1):REM set xor
mode.
5110 MOVE x-10,y:DRAW x+10,y,1
5120 MOVE x,y-10:DRAW x,y+10,1
5130 LOCATE 1,1:PRINT
CHR$(23)+CHR$(0):REM Reset
graphics to normal
5140 RETURN
```

A Look At The Listings

Line 40 Initial positions and size are set for the variables x, y and jump.

Line 50 High definition mode 2 is chosen to give accurate drawings.

Line 60 A sub-routine is called to draw the cursor on screen.

Line 70 Start of main loop.

Line 80 A machine code call which waits until a key is pressed before allowing the program to flow to line 90.

Line 90 Check to see if one of the arrow keys were pressed.

Line 500 End of the main loop.

Line 5000–5060 This routine checks to see if one of the arrow keys is pressed.

The INKEY keyword checks a specific key.

INKEY(1)=right arrow key
INKEY(2)=down arrow key
INKEY(8)=left arrow key
INKEY(0)=up arrow key

It can be seen from the listing that lines 5010–5040 are all similar so let's look at:

Line 5010 If the right arrow key is pressed (INKEY(1) will equal zero (0) therefore the sub-routine at 5070 will be used to draw a cursor. The routine at line 5070 sets the graphic mode to XOR (eXclusive OR) which simply means, if a line is drawn on screen and then drawn again over the same positions the second draw will remove the first leaving any lines which were originally there untouched. Back to line 5010 the bus-routine at 5070 removes the cursor, x is then increased by the jump size 10 and the cursor drawn in the positions.

Graphics

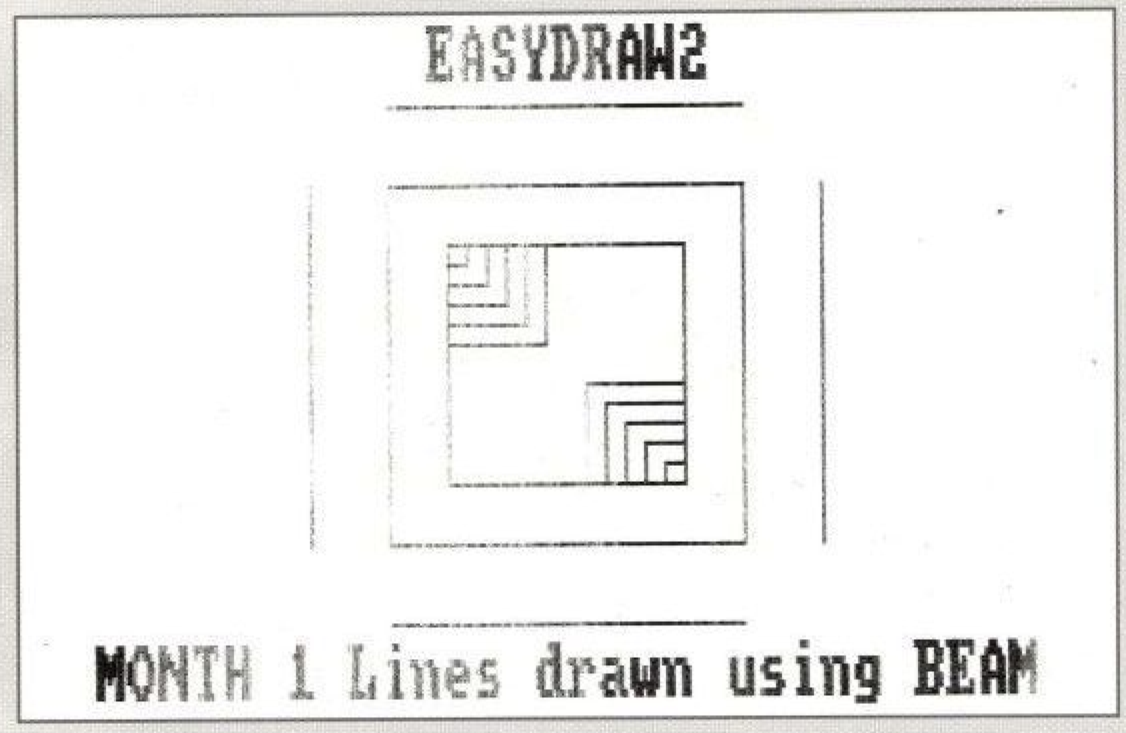
Line 5060 Return signifies the end of the sub-routine and the program flow will be sent back to line 90.

Line 5100 Switch on XOR graphics.

Line 5110 Each line which makes up the cursor is 20 pixels long. The MOVE keyword moves an invisible cursor to the position (x–10,y) a line is then drawn to (x+10,y) using the keyword DRAW. A horizontal line with the colour 1 is drawn with its centre at x,y.

Line 5120 Draws a vertical yellow line. If this is not clear when you run the routine add a line 5115 CALL &BB18 and run the program. You will need to press a key before the vertical line is drawn. Remember to remove line 5115.

Line 5130 Reset the graphics mode, lines drawn now will stay on screen.



Line 5140 Return to the position of the GOSUB.

When the routine is running correctly save as "1curmov"

INFORMATION LINE

The object of this second module is to provide a line at the top of the screen for information (a status line) and provide for colour change, reposition the cursor to the centre and an x,y position indicator. The chosen mode for Easydraw2 is only two colours. With the CTRL key; F will be used to change the foreground and B for the background.

Considerations

1. The status line must be available for all functions.
2. All the functions included in this module need to use a double key system to avoid switching accidentally. (CTRL with a keyboard character)

Variables Used

ip : Ink for the Foreground
ib : Ink for the Background
d : Display of x and y position
mde$: Present mode selected

The Listing

With the first module (1curmov) still in memory, type in the following lines:

```
21 REM variables ip (ink pen) ib (ink
border/paper) d (display) mde$
(mode selected)
40 x=320:y=200:jump=10:ip=13:ib=
0:mde$="MOVE"
45 INK 1,ip:INK 0,ib:BORDER ib
52 WINDOW 1,79,1,1:ORIGIN
0,0,0,640,384,0:GOSUB 12000:REM
Set up a text window (window) to be
the top line. Set up a graphics
window (origin) for the remaining
screen.
100 IF INKEY(53)=128 THEN
ip=(ip+1) MOD 27:INK 1,ip:IF ip=ib
THEN ip=ip+1:INK 1,ip:REM If
CTRL+F are pressed change the
Foreground colour
110 IF INKEY(54)=128 THEN
ib=(ib+1) MOD 27:INK 0,ib:BORDER
ib:IF ib=ip THEN ib=ib+1:INK
0,ib:BORDER ib:REM If CTRL+B are
pressed change the Background
colour and the Border colour
120 IF INKEY(61)=128 THEN
d=(d+1) MOD 2:LOCATE
12,1:PRINT SPACE$(16);:REM If
CTRL+D are pressed switch on x,y
Display
130 IF d=1 THEN LOCATE
12,1:PRINT SPACE$(16);:LOCATE
12,1:PRINT "X=";x;" Y=";y;:REM
Display X and Y
140 IF INKEY(50)=128 THEN
GOSUB 5070:x=320:y=200:GOSUB
5070:IF d=1 THEN LOCATE
12,1:PRINT "X=";x;" Y=";y;:REM
Reset X to 320 and Y to 200
12000 CLS
12010 LOCATE 1,1:PRINT
"Jump=";jump;:REM Distance the
cursor moves
12020 LOCATE 70,1:PRINT
mde$;:REM Working mode selected
12030 IF d=1 THEN LOCATE
12,1:PRINT SPACE$(16);:LOCATE
12,1:PRINT "X=";x;" Y=";y;:REM
Display X and Y
12040 RETURN
```

A Look At The Listing

Lines 40 and 45 Set up the variables to the intial status.

Line 52 Create two windows, a text window of the top line and a graphics window of the remaining screen. Information within the text window can now be cleared using CLS and the graphics screen using CLG.

Line 100 INKEY(53)=128 means that CTRL and F have been pressed simultaneously. ip = (ip +1) MOD 27 means add 1 to ip and divide by 27 setting up ip to equal what remains, this ensures ip increases by one until it reaches 27 when it changes back to 0 again. ip is used to set the foreground colour INK 1,ip.

Line 110 The same as line 100 for the background colour. Note the IF/Then statement to ensure the foreground and background are different colours.

Line 120 CTRL and D sets d to 1

(on) or 0 (off). The display at 12,1 is removed with SPACE$(16).

Line 130 When d=1 display the x and y position.

Line 140 CTRL and R is used to return the cursor to the middle of the screen. GOSUB 5070 removes the cursor, the variables x and y are reset and the final use of sub-routine 5070 replaces the cursor.

Line 120000–12040 A sub-routine used to display the information on the status line.

Save the program as "2status" and then "RUN" to test.

Test the program by pressing

CTRL and F To change the colour of the cursor.

CTRL and B To change the colour of the screen.

CTRL and R To Return the cursor back to the centre of the screen after being moved using the arrow keys.

CTRL and D To Toggle between an x and y display and no display. Note because additional work is being carried out when displaying x and y the movement of the cursor is slower.

ESC To leave the program press the ESC key. NOTE only one line of text exists, it will therefore be necessary to Enter MODE 1 for a full screen.

BEAM

The third module this month introduces the ability to leave a line behind when the cursor is moved, as this is a beam of light I have used the word BEAM.

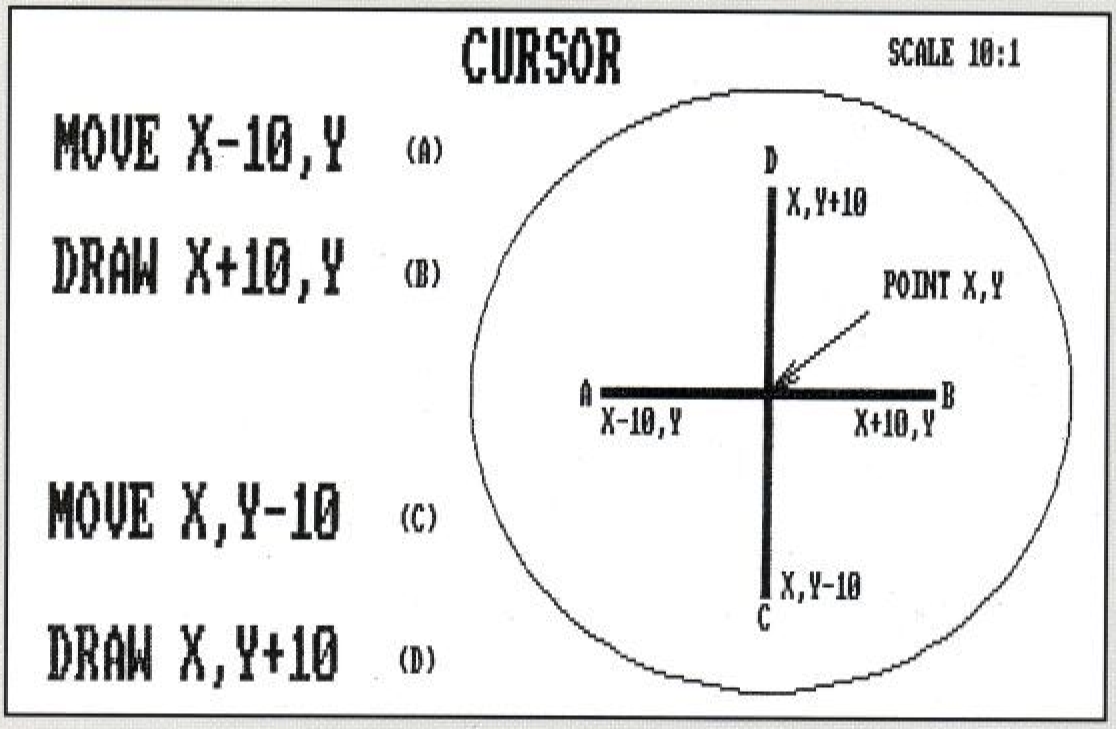
The graphics keywords used in this routine allows the drawing of a line or the moving of the cursor. The coordinates x,y,a,b are absolute positions fixed from the bottom left of the screen which is x=0 and y=0.

Variables used

a : Previous horizontal position of the cursor

b : Previous vertical position of the cursor

beam : Variable for beam status, beam=1 (ON) beam=0 (Off)



Considerations

1. To Draw a line the coordinates of both ends of the line must be known.
2. The cursor must be removed before a line is drawn and replaced afterwards.
3. When a new option is selected the previous option must be switched off.

The Listing (with the previous program in memory type in the listing below)

```
23 REM variable beam (leave line if
beam is on)
150 IF INKEY(54)=0 THEN GOSUB
11000:beam=1:a=x:b=y:GOSUB
12000:REM Reset all the function
variables to zero (line 11000) and
Reprint status line
160 IF beam=1 THEN GOSUB
4500:a=x:b=y
170 IF INKEY(38)=0 THEN GOSUB
11000:GOSUB 12000.
4500 REM draw line (BEAM)
4510 GOSUB 5070:REM Remove
cursor
4520 MOVE a,b
4530 DRAW x,y,1
4540 GOSUB 5070:REM Replace
cursor
4550 RETURN
11000 REM Reset all function
variables to zero
11010 beam=0:ele=0:f1=0:rub=0:xy=
0:tl= 0:tb=0:t=0:mde$="MOVE"
11020 RETURN
12000 CLS
12002 IF beam=1 THEN
mde$="BEAM"
12004 IF ele=1 THEN
mde$="ELASTIC":REM Note this is
for next Month.
12010 LOCATE 1,1:PRINT
"Jump=";jump;:REM Distance the
cursor moves
12020 LOCATE 70,1:PRINT
mde$;:REM Working mode selected
12030 IF d=1 THEN LOCATE
12,1:PRINT SPACE$(16);:LOCATE
12,1:PRINT "X=";x;" Y=";y;:REM
Display X and Y
12040 RETURN
```

A Look At The Listing

Line 150 When B is pressed all previous function variables are reset at sub-routine 11000. The present position of x and y are stored as a and b and the new status "BEAM" is displayed on the status line using sub-routine 12000.

Line 160 If the beam is switched ON the variable beam=1, the routine at 4500 is called to draw a line and a and b are reset to the new position.

Line 170 The key M is used to Move the cursor without drawing a line. The sub-routine at 11000 resets all function variables to zero and the status display is changed to MOVE at sub-routine 12000.

Line 4510 Remove the cursor from the screen before drawing.

Line 4520 Move the invisible cursor to the start a,b.

Line 4530 Draw a line from the start a,b to the end x,y. The 1 at the end signifies the pen colour.

Line 4540 Replace the cursor.

Line 11010 Set all variables used by other routines/functions to zero.

Line 12002 As the mde$ will be "MOVE" set the mde$ to the other options if beam=1 or ele=1. (ele is dealt with next month).

Line 12010–12030 Display information on the status line.

Run and Test the program

Press B when you wish to draw a line or M when you wish to Move to another position. When the program is functioning correctly save as "EASY1" and store in a safe place until next month.

Next Month

You can now draw horizontal or vertical lines and create boxes. Coming up next month are routines to draw lines at an angle and an Input routine to allow information to be typed in, such as the size of the cursor movement.

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WALLBUSTER

BY SEAN MCMANUS

If you are one of those people who got hooked on Arkanoid and all the other derivations of bat-and-ball-knocking-blocks-out-of-the-wall games, then this month's epic type-in is going to be right up your street.

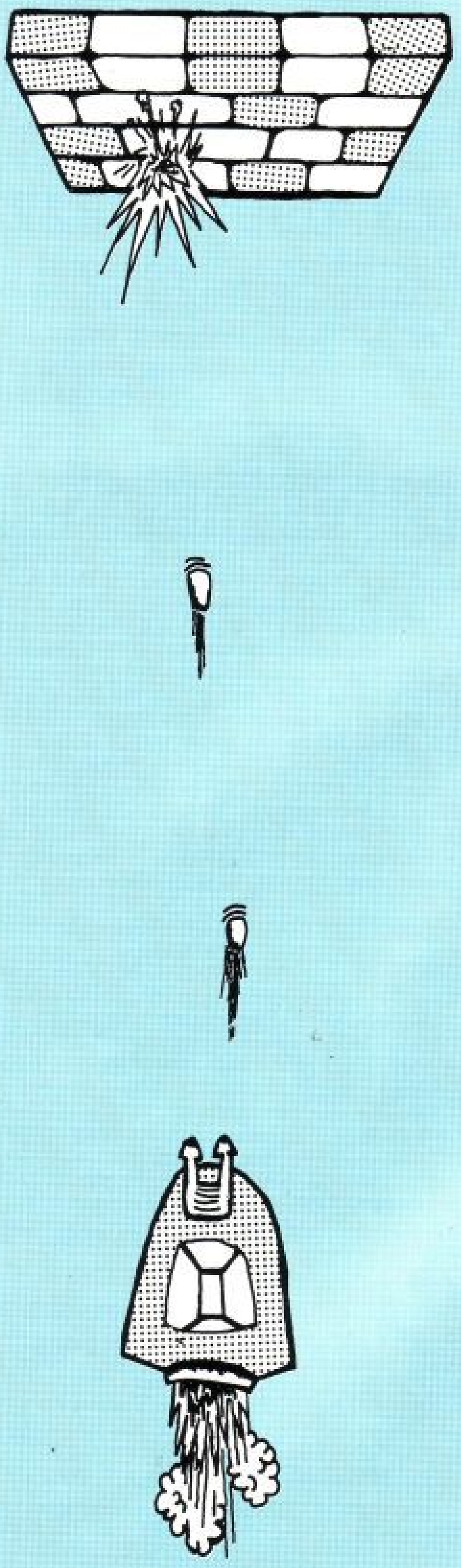
Taking a break from the serious stuff, it's time to get gaming again, and this one by Sean McManus is guaranteed to hook you from the first bounce.

Using the cursor left and right keys to guide your bat, there are four different levels to beat, with a fantastic stereo soundtrack feature to keep you entertained whilst you battle it out against the blocks.

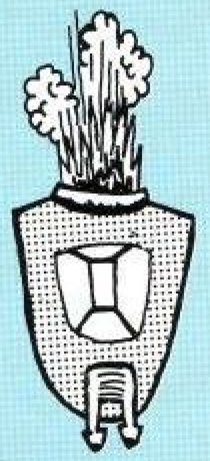
Be warned, this is no piece of cake and will have you pulling your hair out even before you've beaten the first wall.

Apart from that, it's great fun. Type it, save it and, ensuring that you've rebooted your machine so that the memory is fresh, get wallbusting straight away.

```
10 ' WALLBUSTER - (C) 1990 Sean McManus
20 ' (30th July - hi 2 every1 I saw on the 28th &
30th !)
30 '
40 ' This version (veeery carefully) remixed 2nd M
ay 1991.
50 '
60 PRINT"Poking m/c":FOR g=40000 TO 40045:READ a$:
a=VAL("&"+a$):POKE g,a:chk=chk+a:NEXT:IF chk<>&126
2 THEN PRINT"Error in the very first data line":EN
D
70 DATA DD,6E,00,DD,66,02,CD,1A,BC,DD,5E,04,DD,56,
05,EB,4E,23,46,23,EB,C5,E5,1A,AE,77,23,13,10,F9,E1
,01,00,08,09,30,04,01,50,C0,09,C1,0D,20,E8,C9
80 PRINT"Poking Sprites - Please Wait":SYMBOL AFTE
R 255:MEMORY &7FFF:ADDR=&8000:FOR G=1 TO 20:CHK=0:
FOR H=1 TO 14:READ A$:D=VAL("&"+A$):POKE ADDR,D:CH
K=CHK+D:ADDR=ADDR+1:NEXT:READ CHK2$:IF VAL("&"+CHK
2$)<>CHK THEN PRINT"ERROR IN LINE"G*10+90:END
90 NEXT:DATA 08,04,00,40,A8,00,00,D0,FC,00,40,FC,C
C,88,550
100 DATA 54,EC,CC,08,54,CC,CC,08,54,CC,8C,08,00,CC
,688
110 DATA 0C,00,00,04,08,00,08,08,44,E4,CC,CC,CC,CC
,480
120 DATA 8C,08,D8,E8,FC,C4,C0,EC,0C,0C,CC,D4,CC,CC
,910
130 DATA CC,8C,0C,26,CC,EC,4C,4C,4C,0C,0C,26,CC,CC
,5FC
140 DATA 8C,8C,8C,0C,0C,26,44,CC,0C,0C,0C,0C,19,08
,343
150 DATA 44,8C,26,26,33,33,26,08,00,0C,0C,0C,0C,0C
,1EC
160 DATA 0C,00,08,04,FC,EC,EC,8C,A9,03,03,8E,A9,03
,561
170 DATA 47,8E,89,03,8B,8E,89,47,47,8E,89,8B,8B,8E
,64C
180 DATA CD,CF,CF,8E,8C,0C,0C,0C,08,04,E1,C3,C3,87
,6A3
190 DATA D6,FC,FC,85,D6,FC,FC,85,D6,FC,FC,85,D6,FC
,BCB
200 DATA FC,85,D6,FC,FC,85,C2,C0,C0,85,87,0F,0F,0F
,84F
210 DATA 08,04,54,F8,D0,80,F8,E0,E0,E0,F8,91,33,32
,82E
220 DATA E0,33,33,30,C0,33,32,32,91,33,31,30,32,32
,456
230 DATA 32,30,10,30,30,20,08,04,C0,C0,C0,C0,84,0C
,48E
```

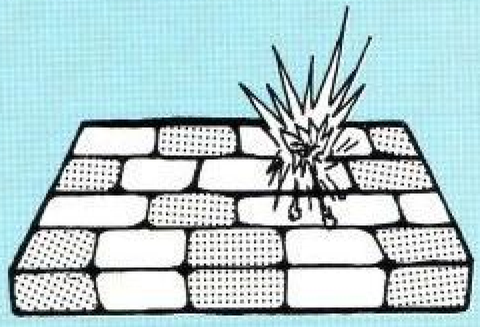


```
240 DATA 0C,48,84,0C,0C,48,84,0C,0C,48,84,0C,0C,48
,300
250 DATA 84,0C,0C,48,84,0C,0C,48,C0,C0,C0,C0,08,04
,4D4
260 DATA E8,F0,3C,CF,D0,B4,6D,8B,E8,F0,3C,CF,D0,B4
,9C6
270 DATA 6D,8B,E8,F0,3C,CF,D0,B4,6D,8B,E8,F0,3C,CF
,93A
280 DATA D0,B4,6D,8B,00,00,00,00,00,00,00,00,00,00
,27C
290 DEFINT a-z:GOSUB 620:score=0:WHILE 1:DIM M(19,
24):OUT &BC00,65:FOR g=40 TO 0 STEP -1:OUT &BD00,g
:FOR h=1 TO 10:NEXT h,g
300 MODE 0:FOR G=0 TO 24:CALL 40000,&80EC,0,G:CALL
 40000,&80EC,19,G:M(19,G)=1:M(0,G)=1:NEXT
310 ' DRAW MAIN SCREEN
320 ENV 1,1,15,1,15,-1,3:ENT 1,10,-1,2
330 FOR g=1 TO 18:m(g,0)=1:NEXT:LOCATE 2,1:PEN 5:P
RINT STRING$(18,"");:PEN 1
340 ON ERROR GOTO 590:GOSUB 780
350 left=0:SCN=SCN+1:ON SCN GOSUB 730,750,770,790
' 4 DIFFERENT SHEETS
360 X=INT(RND*10)+4:CALL 40000,&8022,x,24:BX=x+1:B
Y=23:BDX=-1:BDY=-1:CALL 40000,&8000,bx,by
370 OUT &BC00,65:FOR g=0 TO 40:OUT &BD00,g:FOR h=1
 TO 10:NEXT H,G
380 WHILE INKEY$<>"":WEND:CALL &BB06
390 ' MAIN LOOP
400 EVERY 4,1 GOSUB 480:WHILE left>0
410 OX=X:WHILE X=OX AND LEFT>0:IF INKEY(8) THEN X=
X+1
420 IF INKEY(1) THEN X=X-1
430 WEND
440 DI:IF X<1 OR X>17 THEN X=OX
450 CALL 40000,&8022,OX,24:CALL 40000,&8022,X,24:M
(OX,24)=0:M(OX+1,24)=0:M(X,24)=1:M(X+1,24)=1
460 EI:WEND:ERASE m,t:WEND
470 ' BALL MOVE
480 OBX=BX:OBY=BY
490 BX=BX+BDX:IF m(bx,by) THEN 510
500 by=by+bdy
510 IF BX=18 THEN BDX=-1:SOUND t(bx),956,5,15,1,1:
IF BY>1 AND BY<24 THEN 570
520 IF BX=1 THEN BDX=1:SOUND t(bx),956,5,15,1,1:IF
 BY>1 AND BY<24 THEN 570
530 IF by=1 THEN bdy=1:SOUND t(bx),956,5,15,1,1:GO
TO 570
540 IF m(bx,by)=1 THEN f=1:IF BY=24 THEN BDY=1
550 IF M(BX,BY)>1 THEN CALL 40000,a(M(BX,BY)),BX,B
Y:M(BX,BY)=0:F=1:score=score+10:left=left-1:IF LEF
T=0 THEN G=REMAIN(1)
560 IF F THEN BX=OBX:BY=OBY:BDY=-BDY:SOUND t(bx)+1
28,851,40,15,1,1:F=0:IF RND>0.5 THEN BDX=-BDX:GOTO
 490 ELSE 490
570 CALL 40000,&8000,OBX,OBY:CALL 40000,&8000,BX,B
Y:RETURN
580 ' DEATH - TRIGGERED BY BALL'S SUBSCRIPT OUT/RA
NGE ERROR
590 CALL 40000,&8000,oBX,oBY:a$="Game Over":y=200:
GOSUB 600:a$="Score:"+STR$(score):y=160:GOSUB 600:
INK 15,26,15:INK 14,15,26:WHILE INKEY$<>"":WEND:CA
LL &BB06:RUN 290
600 TAG:FOR g=1 TO LEN(a$):PLOT -10,-10,14+(g AND
1):MOVE (320-LEN(a$)*14)+g*28,y+RND*10:PRINT MID$(
a$,g,1);:NEXT:TAGOFF:RETURN
610 ' TITLE SCREEN & INKS INIT
620 MODE 0:CALL &BC02:BORDER 3:RESTORE 620:FOR G=0
 TO 12:READ I:INK G,I:NEXT
```

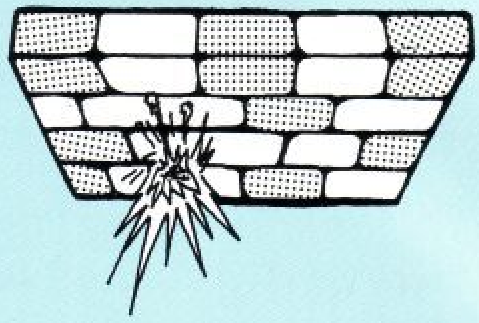






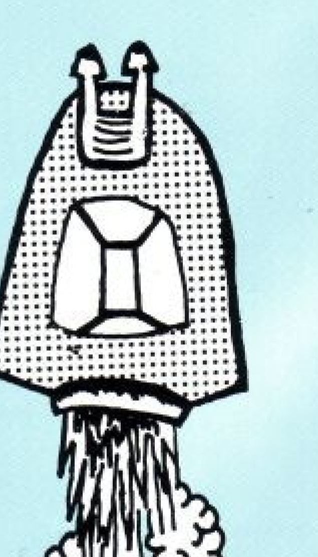


```
630 A$="WALLBUSTER":Y=350:GOSUB 600:INK 15,25,15:I
NK 14,15,25
640 PEN 3:PAPER 0:LOCATE 4,7:PRINT"By Sean McManus
650 PEN 7:LOCATE 9,10:PRINT"Keys:":LOCATE 1,11:PRI
NT"Cursor left & right"
660 PEN 1:LOCATE 5,16:PRINT"Press any key"
670 SYMBOL 255,48,254,22,60,116,210,254,16:LOCATE
20,25:PRINT";
680 BX=5:BY=3:CALL 40000,&8000,BX,BY:LOCATE 4,14:P
RINT"Feat. TRANSOUND"
690 DIM M(19,24):FOR G=0 TO 19:M(G,0)=1:M(G,24)=1:
M(0,G)=1:M(0,G+5)=1:M(19,G+5)=1:M(19,G)=1:NEXT:BDX
=-1:BDY=-1:EI:EVERY 4,1 GOSUB 480:DIM T(20)
700 WHILE INKEY$<>"":WEND:GOSUB 820:G=REMAIN(1):ER
ASE M,T
710 RETURN:DATA 3,26,6,15,10,20,5,25,1,19,21,4,8
720 ' SHEETS
730 s=4:FOR G=2 TO 17:FOR H=2 TO 6 STEP 1:S=S+1:IF
 S=7 THEN S=3
740 left=left+1:CALL 40000,a(s),g,h:m(g,h)=s:NEXT
h,g:RETURN
750 s=4:FOR G=2 TO 17 STEP 1.5:FOR H=2 TO 10 STEP
2:S=S+1:IF S=7 THEN S=3
760 left=left+1:CALL 40000,a(s),g,h:m(g,h)=s:NEXT
h,g:RETURN
770 SCN=0:GOSUB 730:FOR G=4 TO 17 STEP 5:FOR H=10
TO 12 STEP 4:M(G,H)=1:LOCATE G+1,H+1:PEN 15:PRINT
CHR$(224);:NEXT H,G:INK 15,15,24:RETURN
780 DIM t(19):FOR g=0 TO 6:t(g)=4:NEXT:FOR g=7 TO
12:t(g)=2:NEXT:FOR g=13 TO 19:t(g)=1:NEXT:RESTORE
780:FOR g=1 TO 7:READ a(g):NEXT:RETURN:DATA &8000,
&8022,&8064,&8086,&80a8,&80ca,&80ec
790 LOCATE 1,25:PEN 1:PRINT"*";:FOR g=1 TO 16
800 FOR h=1 TO 16:IF TEST(g*2,16-h) THEN m(g+2,h-1
)=4:CALL 40000,a(4),g+2,h-1:left=left+1
810 NEXT h,g:LOCATE 1,25:PRINT" ";:CALL 40000,a(7)
,0,24:RETURN
820 ' COSMOS 1 - (C) 1988 Sean McManus
830 A$="":ENV 1,7,-1,5:ENT -1,1,1,1:SOUND 135,0,1,
1
840 SOUND 1,239,40,14,1,1:SOUND 4,0,20,1:SOUND 4,2
39,40,14,1,1:SOUND 2,956,40,14,1,1:SOUND 2,956,40,
5
850 RESTORE 850:s=0:WHILE s<>2 AND A$="":READ s:A$
=INKEY$
860 IF s<>2 AND s<>0 THEN SOUND 1,s,40,14,1,1:SOUN
D 2,s*2,40,14,1,1:SOUND 4,s+5,40,14,1,1 ELSE IF s=
0 THEN SOUND 1,0,40,1:SOUND 2,0,40,1:SOUND 4,0,40,
1
870 WEND
880 SOUND 2,0,40,5:FOR g=14 TO 8 STEP -1:RESTORE 9
20:FOR h=1 TO 12:READ s:SOUND 1,s,40,g,1,1:SOUND 2
,s*2,40,g:SOUND 4,s+5,40,g,1,1:A$=INKEY$:IF A$=""
THEN NEXT h,g
890 WHILE A$="":A$=INKEY$:WEND
900 DATA 478,379,478,379,478,426,568,20,40,478,379
,478,379,478,379,179,239,478,379,478,379,478,379,1
59,478,379,478,379,478,379,142,239,478,379,478,379
,478,426,568,20,40
910 DATA 956,902,956,902,804,851,902,956,902,804,8
51,902,956,900,956,0,900,956,0,900,851,956,0,900,9
56,956,956,0,239,478,379,478,379,478,379,179,239,4
78,379,478,379,478,379,179,478,379,478,379,478,426
,568,1
920 SOUND 135,40,5,15:RETURN:DATA 239,20,253,70,50
6,50,239,20,253,70,506,50,2
930 ' Phew !  Time to save, and then for some seri
ous WALLBUSTIN' !
```









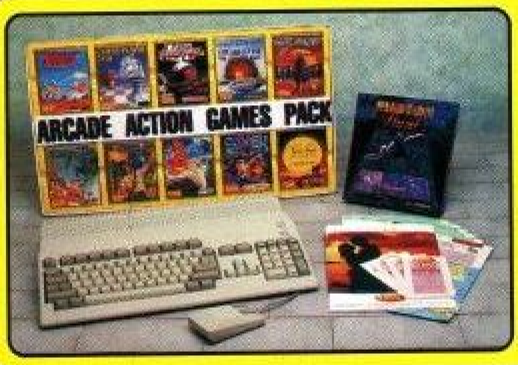


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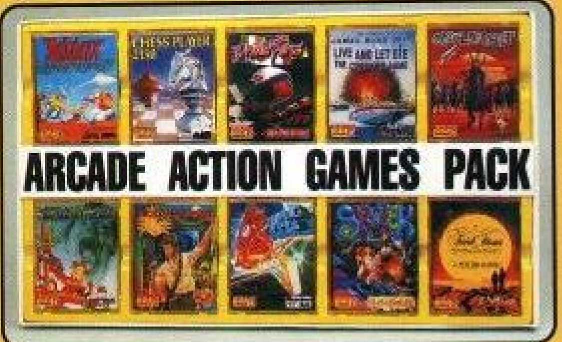
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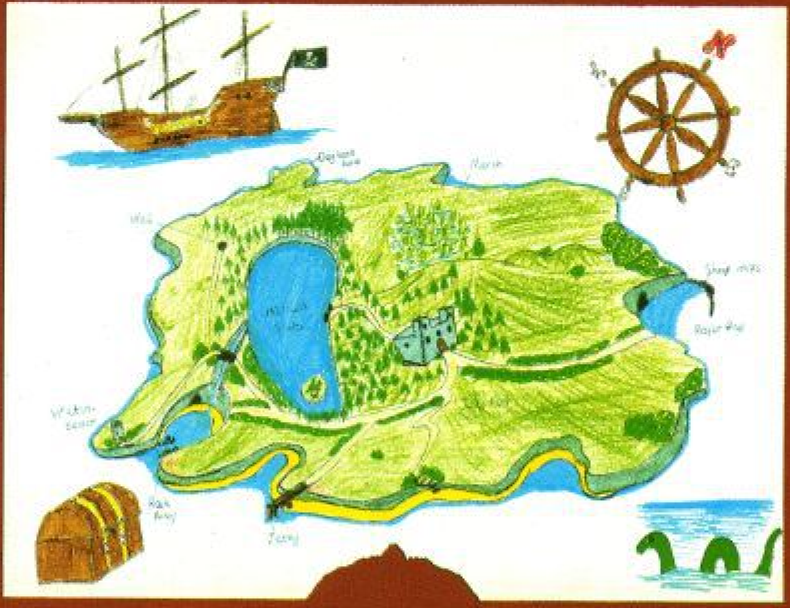
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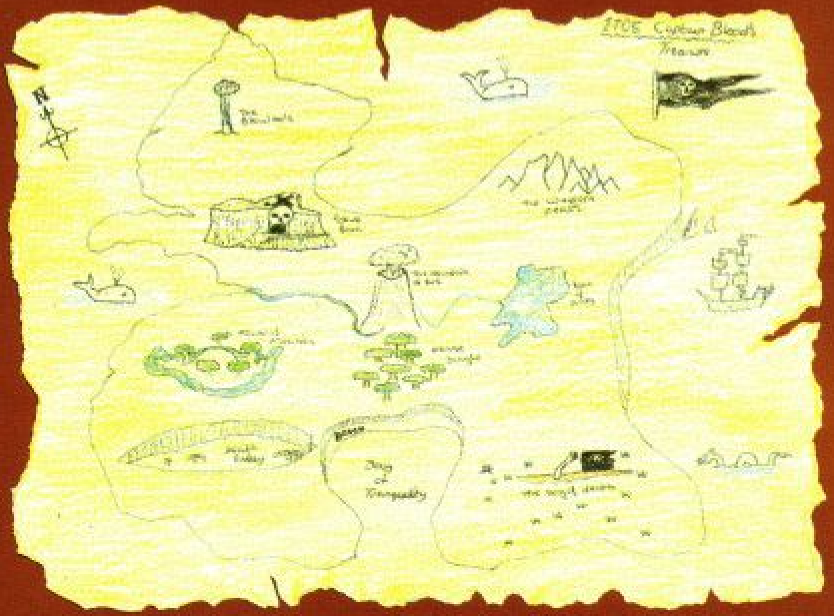
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TREASURE TROVES

We were originally going to dedicate one page to the winning entries of our fabulous Famous Five competition (ACU July 1991), but once you've had a quick shifty through this selection of the winning entries, you'll see why we had to expand our coverage to two pages.

The overall quality of all the entries was truly phenomenal, and it took the ACU crew a long, long time to pick the lucky winners from the not so lucky entries but, nevertheless, it had to be done.

And so to the tremendously lucky winner, who gets hold of the brilliant Famous Five books and videos. Stand up and take a bow Pat Slocombe, from Herongate, Essex, for the truly epic Treasure Island rendition.

While Pat is basking in glory, the rest of you should be casting an eye through the following list, to see if you are one of the lucky runners-up, who will be getting a copy of the sensational Famous Five computer game very soon.

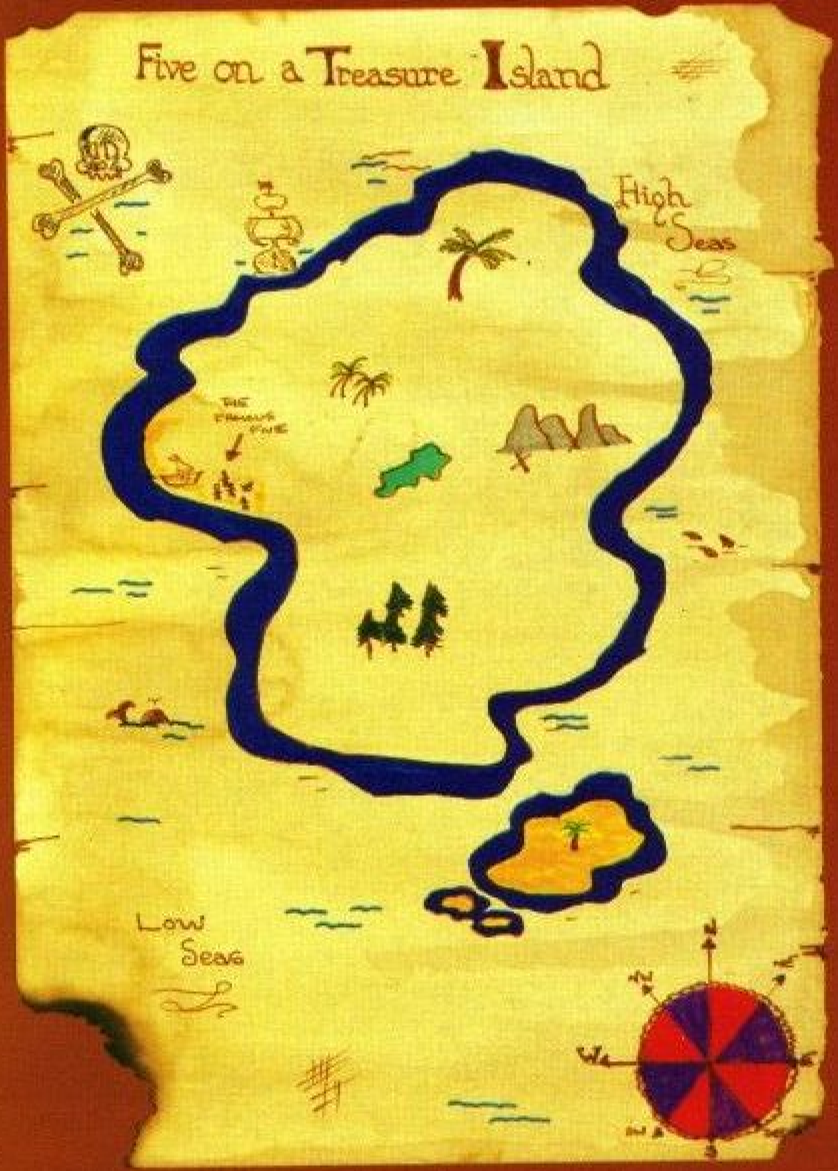
The runners-up are: Philip Norris of Mundesley, Norfolk; Matthew Breckon of Poole, Dorset; Brian Lutchmiah of Totton, Southampton; Carolyn Insch of Culloden, Inverness; Martyn Scott Bayliss of Newcastle; Stephen Caie of Hatfield, Herts; Roger McCorry of Ballyclare, N.Ireland; Adam Downing of Leicester; Edward Byne of Newton Abbot, Devon and Philip Putman of Purley, Surrey.

All of us at ACU would like to thank each and every one of you who sent in such a brilliant selection of treasure Islands and we're only sorry that you can't all be winners.

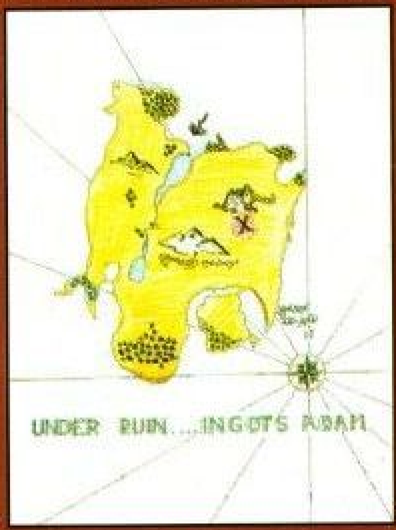
However, after you've had a good look at this selection of winning entries, why not turn to page 12 and see what goodies we have in store for you in this month's epic competition. Have fun and good luck, all of you.



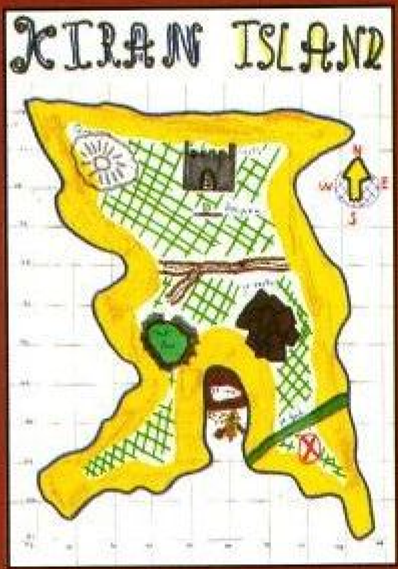
PAT SLOCOMBE, ESSEX ▶



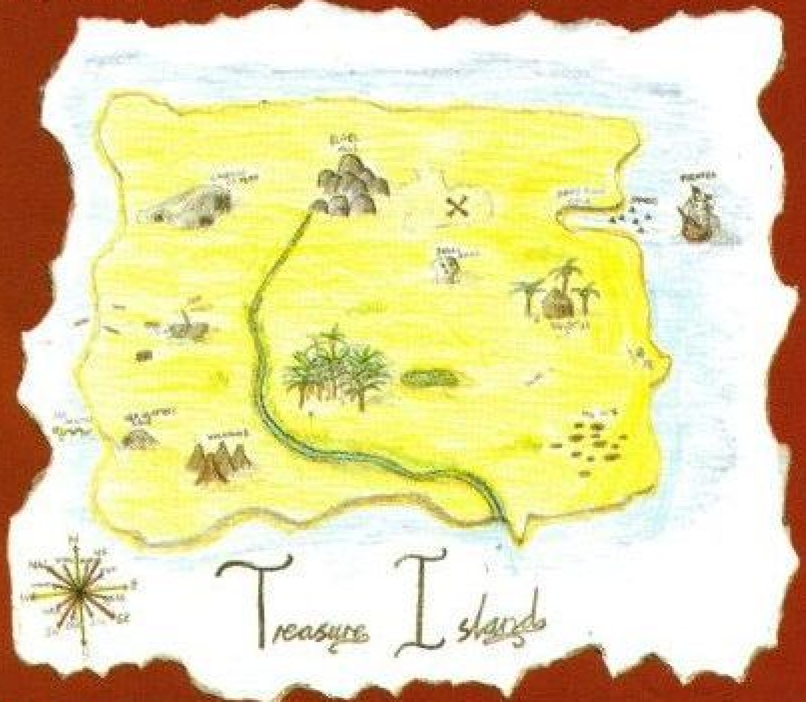
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BRIAN LUTCHMIAH, SOUTHAMPTON



EDWARD BYNE, NEWTON ABBOT

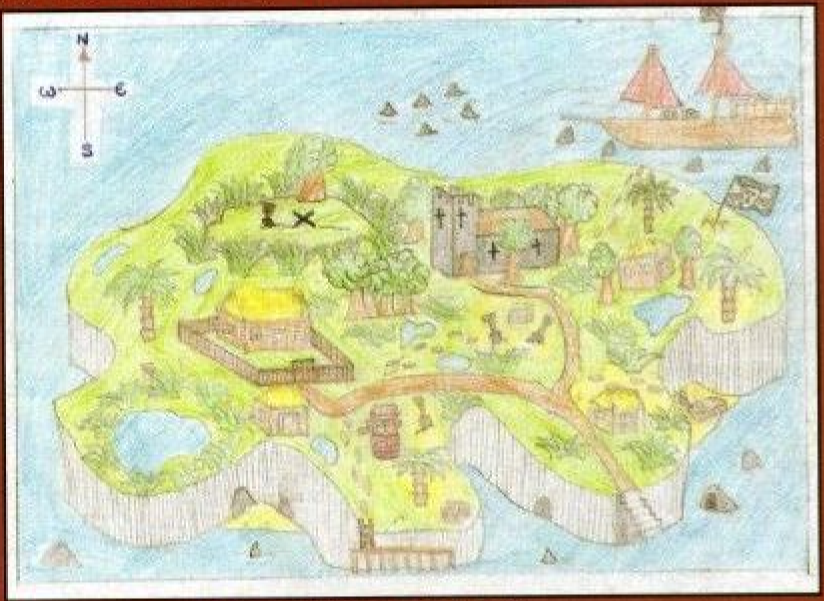


STEPHEN CAIE, HERTS

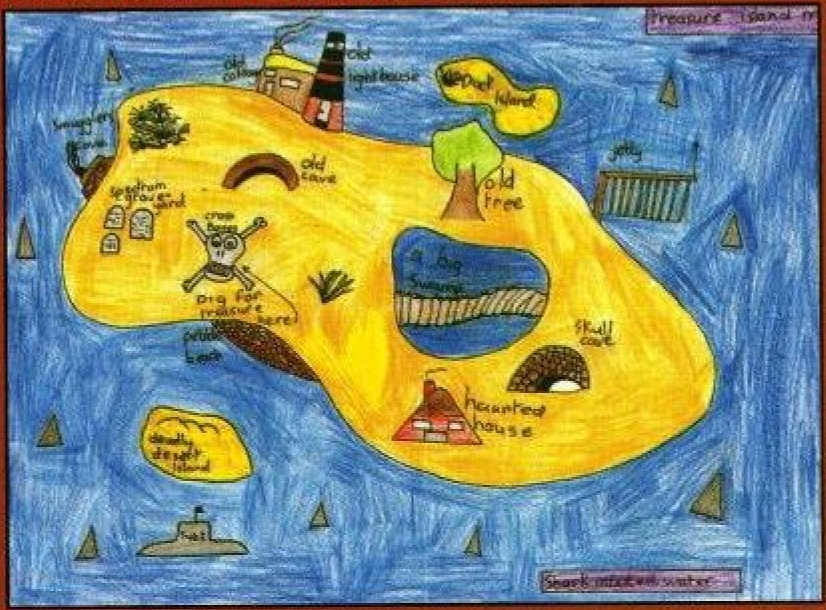
CAROLYN INSCH, INVERNESS



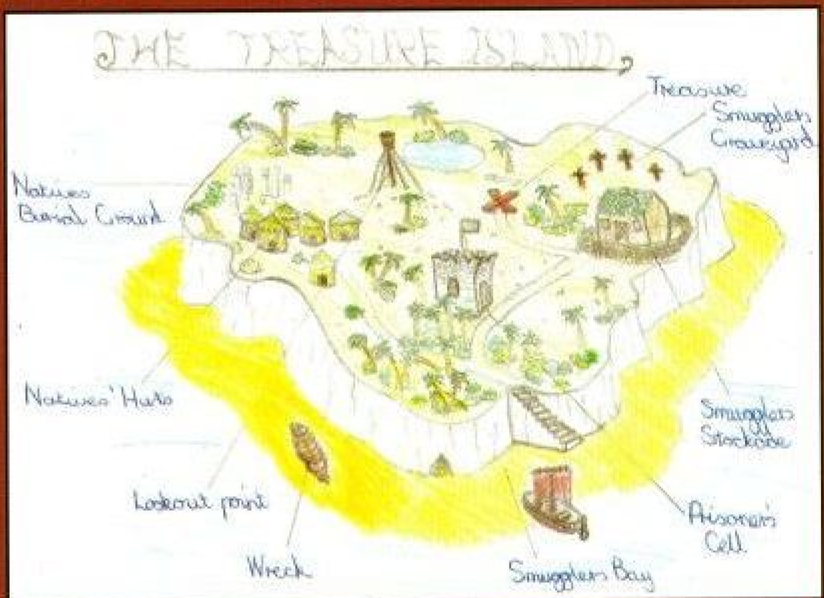
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WANTED ACU type-ins, disc only. Will return your disc full of PD software. No SAE, no reply. E. Spicer, 3 Golden Avenue Close, East Preston, Littlehampton, West Sussex BN16 19S.

WANTED Mini office 2. Will pay cash. Must be on disc. Leave phone no. where you can be contacted. I will get back to you. Also tape copy programs wanted. Phone 081 507 8056.

WANTED 64K memory expansion. Also Stop Press program T.R. Ball, 5 Howarth Avenue, Church, Nr. Accrington, Lancs. Phone 0245 392220.

WANTED Soft 968 and Mannesmann Tally MT81 applications manual. Good condition. Write with asking price and condition to: Ian Napier, 20 Grove Avenue, New Costessey, Norwich, NR5 0HN. SAE for guaranteed reply please.

WANTED CTM 664 colour monitor. Will exchange for GT65 green screen plus tapes. Please contact Carl at 16 Hillside Road, Penyffordd, Chester, Clwyd CH4 0JJ, or phone Carl on 0244 544498.

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CPC FANZINE Play Mates. Issue 8 out 1st June, full of reviews, tips and Bonzo news. Now £1.30, which includes P+P. Carl Surry, 37 Fairfield Way, Barnet, Herts EN5 2BQ.

AOK Fanzine, issues 2 and 3 out now. Includes features, reviews, type-ins, small projects and more. Send 60p (includes P+P) to Paul Escott, 31 Colebrook Road, Shirley, Solihull, West Midlands B90 2LB.

ATTENTION budding writers. CPC Domain fanzine needs your articles for its pages. Free copy of the mag if your article is used. Send to: 119 Laurel Drive, East Kilbride, Glasgow G75 9JG.

Penpals

CPC PENPALS wanted to swap games or demos on disc or tape. Send your lists to Carl Wilson, 64 Fishponds Road, Kenilworth, Warks CV8 1EZ. Greetings to NWC and CBS.

PENPALS WANTED to swap games and demos on disc. Any age, any country. Help also given on new and old games. Write to Richard Wildey, 41 Enmore Gardens, London SW14 8AF.

WANTED PENFRIENDS to swap games, cheats, pokes. I have a 464 with extra 64K and Genius Mouse. Alwyn Williams, Swn-Y-Gwynt, Bodiffordd, Anglessey, Gwynedd LL77 7DZ.

Due to unforeseen circumstances, our long-awaited PIECES section has had to be delayed yet again. However, the good news is that all of the programs received to date have now been sorted and assigned disc/cassette space for your perusal and, if everything goes according to plan, they should all get the airing they deserve in next month's issue.

Apologies for those who are still waiting to see their proggies in print, but they are on their way, honest!

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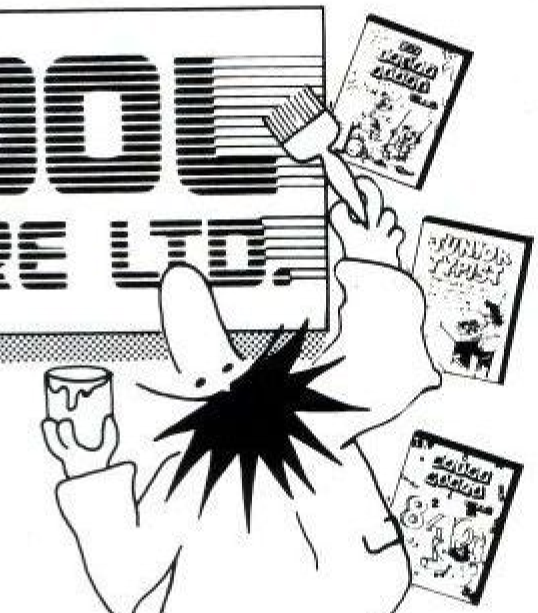
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ADVERTISERS INDEX

Doc Wilson deals with a couple of quickies, then introduces you to a real Tasmanian devil.



Filed under Oz!

Good evening and welcome to 'Who's column is it anyway?' Two pages of alternative humour in which you, the readers, get to improvise an exceptionally witty introductory paragraph in the style of a talented computer journalist – 'cos I can't think of anything to write. Well it's either that or creative use of 'white space'.

Right, having got that bit out of the way I think we can safely proceed with the first letter. G Carroll of Lurgan, Craigavon, word processes:

'My friend has an Amstrad PC 3086 with a 3.5 inch disk drive and I have an Amstrad CPC 6128+ with a 3 inch drive.

Could you please advise me on whether it is possible for us to exchange data files if I were to purchase a 3.5 inch disk drive for my computer?

If it is possible, could you please also give me an idea of where I might get the best possible deal in additional software etc., which will be necessary to effect the transfer.'

In short, transferring data files (such as text) from a CPC to a PC is certainly possible. The average 3.5 inch disc can store around 720K of data as opposed to the standard 180K per side with 3 inch types. Because CPCs only expect to use 3 inch discs, 3.5 inch drives made for the CPCs will use some clever software that enables them to access the extra space. Having got this far, it's simply a case of using some more software to recognise the disc format that IBM PCs and their compatibles use. Both Siren Software (061 228 1831) and Microstyle (0274 636652) supply 3.5 inch drives, with suitable CPC-PC software available separately.

A less expensive solution would be to hook a cable between the two machines and transfer data this way. This does mean that the machines must be in close proximity, and you lose out on having a 720K drive attached to your CPC. If enough readers are interested in this option, it could be covered as a future hardware project – all those in favour raise your hands!

Amstrad Antibiotics

An avid Amstrad gamester, who's name eludes me, has written in asking if a virus could be responsible for the demise of his 200+ games. Apparently he can no longer get any of the tapes to load. Viruses are nasty pieces of code, written by even nastier programmers, which hide on discs (the code, not the programmers!) and gradually corrupt your files each time the disc is accessed. What makes viruses even more irritating is the way that they make copies of themselves in the computer's memory, and then place themselves on any 'uninfected' discs that you may later use – provided the machine has not been switched off in between. Keeping discs write-protected is the only guaranteed way of preventing them becoming infected.

Viruses have certainly become a way of life for owners of computers such as the Commodore Amiga, but our beloved CPCs seem to have remained untouched. The reason is that our machines are rather less flexible (but no less usable) and don't provide quite as much scope for virus programmers. CP/M may offer a slightly more hospitable environment for viruses, but I

think a 'CPC Virus' is still highly unlikely. As far as tapes are concerned, viruses are definitely out. It's going to look a tad suspicious if a virus asks you to rewind your latest game tape, stick some sellotape over the write-protect holes, and press REC and PLAY!

A far more likely cause of the 200 unloadable tapes is a problem with the 464's built-in tape recorder. The solution may be as simple as cleaning the tape head/capstan/pinch roller etc., to remove the grime which inevitably accumulates. Another possible reason is that the tape head has become out of alignment. OJ Software (0257 421915) sell a cassette-head alignment kit which should rectify the problem. In fact, many tape users (especially those with 6128s) may benefit from giving this a whirl.

XEXOR

Xexor (no, I couldn't figure out how to pronounce it either) may sound like the name of the latest arcade blast 'em-up, but is actually a very useful disc utility written by Richard Wilson of Tasmania. There has been no shortage of this sort of program in the past – *Discology, Bonzo Doo Dah, Oddjob* and *Supadisc* spring to mind – but many are no longer available. Can Xexor fill this niche and improve on past products in the process? Read on…

Xexor manages to include just about every command you could wish for under one, easy to understand, user interface. Gone are the days of typing obscure CP/M commands or wrestling with Amsdos RSXs just to copy a single file or format a disc. This is especially useful for those people who know exactly what they want to do, but don't want to learn the intricacies of a complex operating system in order to do it. Xexor will allow them simply to select the option from a series of pull-down menus. Another bonus is the exceptionally well-implemented help facility which can give useful information on any of Xexor's features.

Having said this, Xexor also offers a traditional command line interface for those power users who just aren't happy unless they're staring at a flashing cursor.

The various options available fall into two general categories, files & sectors. Many people will be content to limit themselves to file operations, with only the more adventurous wishing to roll up their sleeves and delve deep into the disc's structure. People who require this level of detail are likely to be machine-code fanatics, and should appreciate Xexor's more advanced features.

Even if hacking discs isn't your scene, Xexor still has a tremendous amount to offer. The Amsdos commands: catalogue, erase, rename, user etc., are all available from menus as well as the ability to backup and format discs, which is traditionally CP/M territory. In addition to these are other features such as copy, unerase, and 'type' which can display a text file on the screen. Unerase is particularly useful because it can recover any file which has been recently deleted.

All the file options are well implemented and are a good deal quicker & more powerful than their Amsdos/CP/M equivalents. Format, for example, was approximately 50% faster and provided the ability to format specific tracks and for the users to create their own custom formats. 'Backup' was also slightly quicker and is able to cope with several protection systems that cause disckit3 to fail. A particularly interesting feature of the backup option, is its ability to use 'brain files' to cope with very heavily protected discs. These 'brain files' contain detailed information about the protection system which is used by Xexor during the backup process. The review copy contained files to cope with Speedlocked discs such as *Robocop, Myth* and *Turrican*. Information on writing your own brain files isn't given but it's going to require a certain amount of machine code programming knowledge. Future updates are probably going to depend on the generosity of Mr Wilson himself.

If you're interested in a specific file on one of your discs, Xexor can give you much more detailed information about it than either Amsdos or CP/M can. The file's start address, length, execution address and the sectors which it occupies are all instantly available. When you ask for a catalogue/directory of a disc, you'll be shown each file's attributes i.e. read-write, read-only, directory or system. Any of these can be highlighted with the cursor and easily altered so that a file can no longer be deleted or so that it will not show up on a normal Amsdos catalogue.

I realise that many of the above features are already available under CP/M but they're so inaccessible as to render them almost useless to the average user. I found myself using Xexor to manipulate files in ways that I wouldn't previously have done – not because I didn't know how before, simply because it was too much effort.

For those who require greater control of their discs, Xexor offers a whole host of sector options. Individual sectors can be displayed and edited in both hex and ascii, moved around, filled with a selected byte value, or sent to the printer. Details about which sectors are used on each track are also available, and the user can search areas of the disc for a chosen string.

Xexor will utilise all expansion ram including silicon discs and can use up to two drives, including 3.5 inch or 5.25 inch variants. To get the most from such drives a small program is included to copy the disc rom, patching it en route, and writing it to a file which can be subsequently burnt onto an EPROM. As long as this EPROM is installed in a ROM slot below seven, both Amsdos and Xexor will be able to utilise its features.

All in all, I'm quite impressed with Xexor and can find few faults with it. The ability to use wildcards when doing a directory would have been nice, as would the ability to verify a disc and check for bad sectors. The help facility is a welcome feature but no real substitute for a well-written manual. Despite these minor niggles, Xexor strikes me as a highly polished piece of programming for which Richard deserves much credit. The well thought out 'front end', and being able to configure the program to your own requirements, certainly puts it in the league of commercial software. I can thoroughly recommend it to anyone who owns a disc drive.

Competition time! Fancy winning the UK distribution rights to Xexor? All you have to do is write, in fifteen words or less, why you think you're the right person for the job, and send your entry on the back of a cheque made out for 5000 Australian dollars to:

Richard Wilson
24 Clare Street
Mowbray TAS
Australia 748
Tel: 011-61-03-931437

Seriously though, if you're genuinely interested in distributing Xexor then Richard would be delighted to hear from you. In the meantime, copies can be obtained from Richard himself for $50.00 (AUST) inc. P&P.

Well, it's almost time to say hello to big old Mr 'Bottom of the Page' again, so while I've got a few column inches left I'll bid you a fond farewell until next month. Don't be shy about sending in your letters, comments, used £5 notes, or anything else for that matter.

Bye!!!

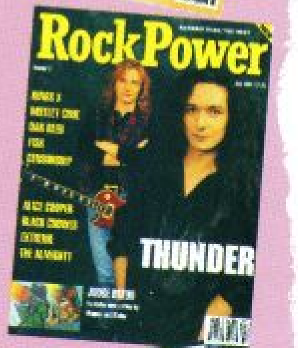
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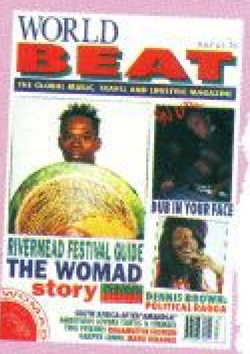
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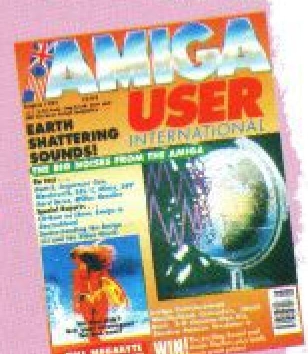
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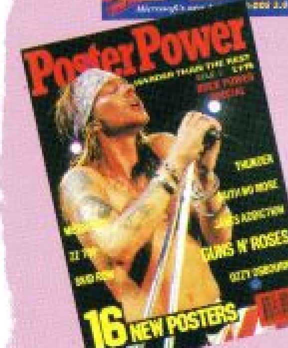
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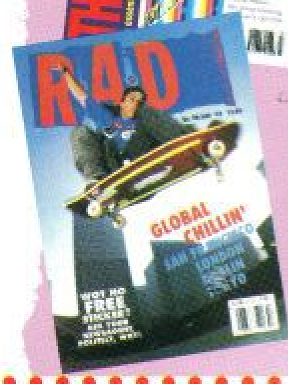
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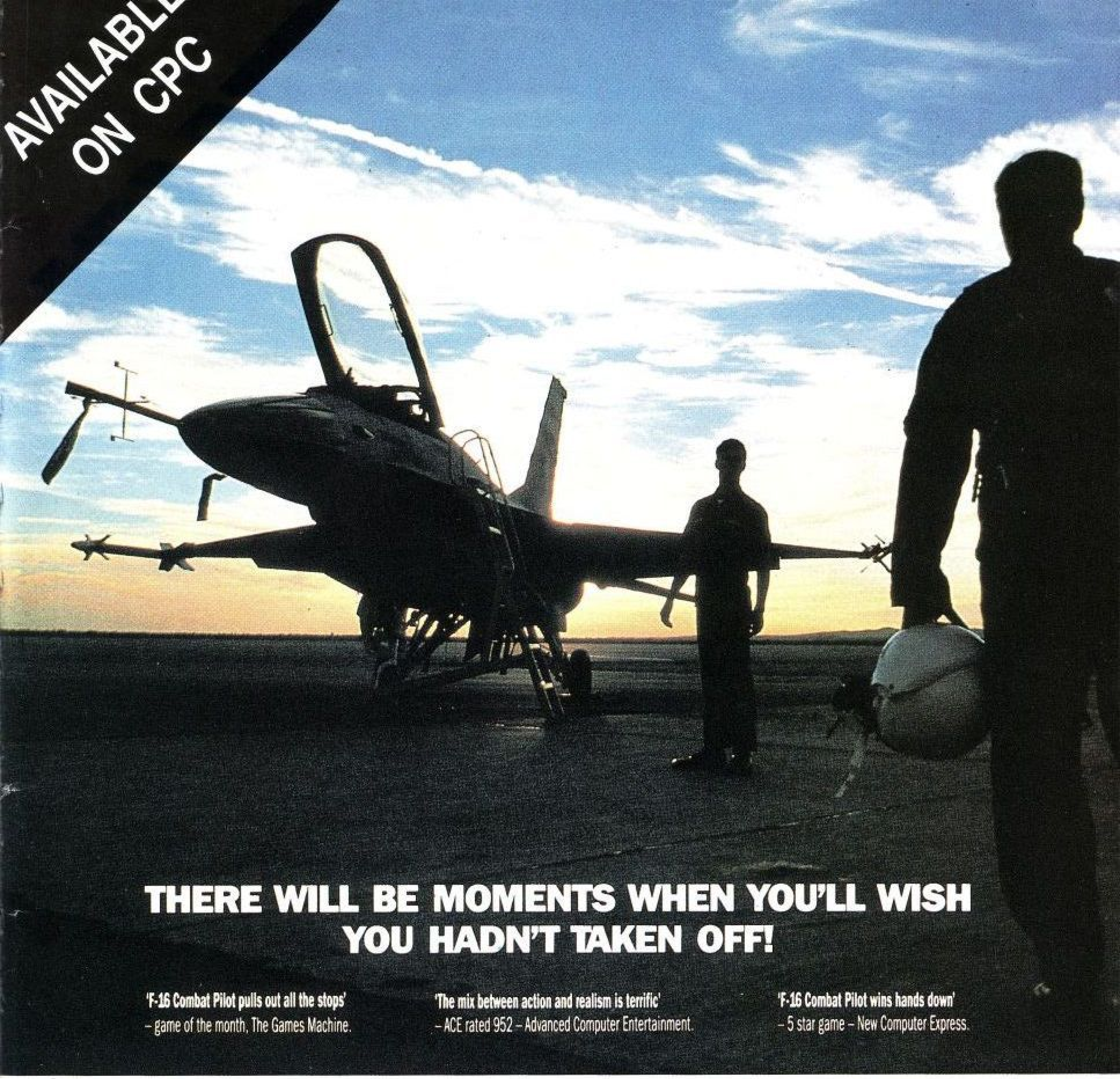


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I'm primed for action as my F-16 leaves the runway. This time my mission is to destroy a battalion of tanks. Suddenly, threat warning – interceptors closing fast! I quickly select dogfight mode and arm a Sidewinder. We both fire at the same time – chaff and a high-g turn out manoeuvres his missile. A loud explosion tells me he's not so lucky.

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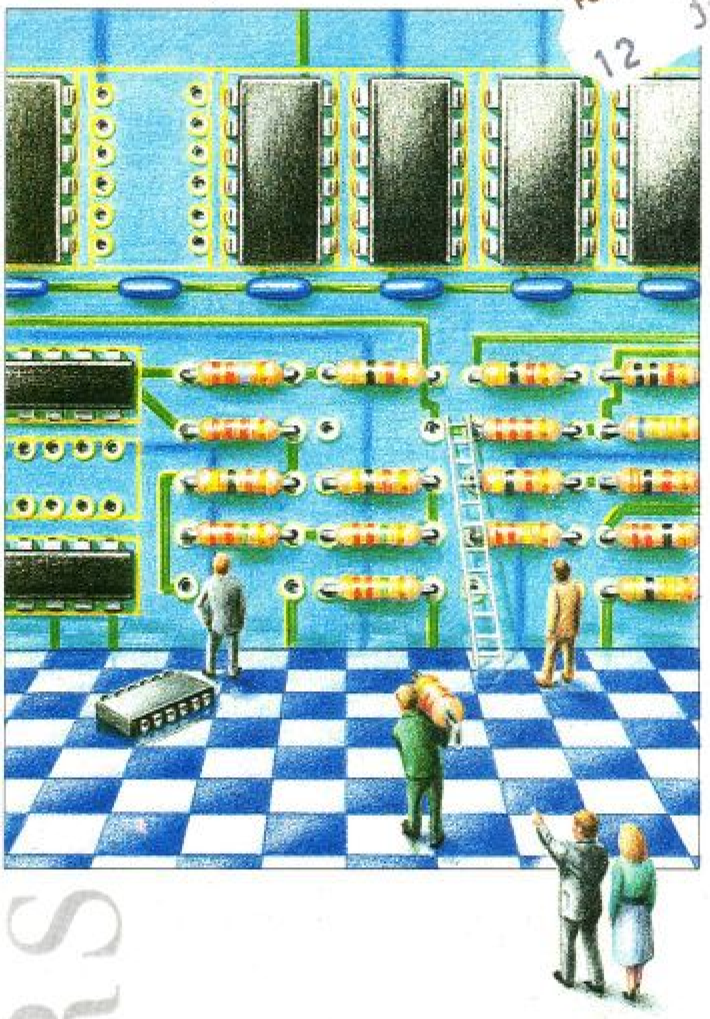
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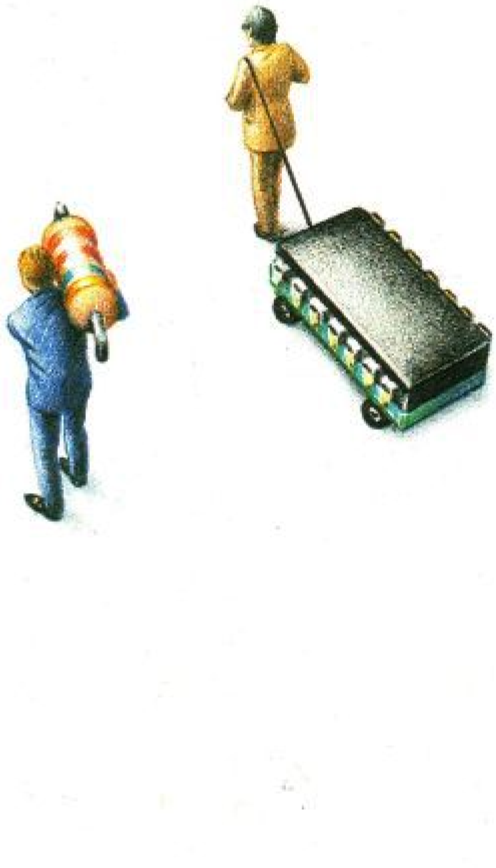
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